TRANSPORTATION LIBRARY

Vol. XXV JULY 1931 No. 7

The EXCAVATING ENGINEER

IN THIS ISSUE:

Record Production by Bechtel Kaiser Company, Ltd., on Pipe Line

Cutting Through Mount Olympus

French Contractors Tell Why They Prefer Dragshovels

Dug Up Here and There

Front Cover Illustration: Thousands of miles of pipe . . veritable industrial highways . . transport oil and natural gas from the sources of supply. Bechtel Kaiser Company, Limited, use two Gas + Air shovels to prepare the right-of-way for new 290 mile natural gas pipe line. See page 327

1/2-yard
5/8
3/4
7/8
1
1-1/4
1-1/2
1-3/4
2
2-1/4
2-1/2
3
3-1/2
4
4-1/2
5 and up to 16 yards

Shovels
Drag-lines
Clam-shells
Lifting Cranes
Drag-shovels
Magnet Cranes
Tunnel Shovels
Dredges
Drag-line Buckets

Gaso-line
Diesel
Gas + Air
Electric
Steam
Diesel-Electric

21-B

CONVERTIBLE SHOVEL, DRAGLINE CLAMSHELL, CRANE

a fast, new 3/4-yard Bucyrus-Erie

Another addition to Bucyrus-Erie's new line of universal machines.

Greater profits for every contractor who needs a 3/4-yard excavator.

Greater combined speed, power and stability than ever before achieved in a machine of this size.

The 21-B is completely new. Yet every detail is tested for its ability to increase speed and economy. No other small excavator has so *many* features that cut operating costs.

Make a point-by-point check of the specifications, or inspect the machine itself. See it perform!

Phone or write nearest branch office.

Gas, Diesel or Electric

BUCYRUS-ERIE COMPANY, South Milwaukee, Wisconsin

A-323

BUCYRUS ERIE

Representatives throughout the U. S. A. *Branch Offices*: Boston, New York, Philadelphia, Atlanta, Birmingham, Pittsburgh, Buffalo, Detroit, Chicago, St. Louis, Kansas City, Mo., Dallas, San Francisco. Offices and distributors throughout the world.

It is Cheaper to Handle Materials the Sauerman Way

IN excavating sand and gravel, stripping overburden, storing and reclaiming crushed stone, ores, etc., there often is a great opportunity to save money by using a machine that will both dig and haul. Such a machine is the Sauerman "Crescent" Drag Scraper.

A "Crescent" Drag Scraper in operation represents the acme of economy in applying power to move materials. The bottomless bucket starts to gather its load the instant it is pulled forward, filling to capacity within a few feet of travel; then it ceases to dig and simply "rides" its load across the surface. When the bucket reaches the designated dumping point, the operator merely moves two levers on the power unit to cause the bucket to discharge its load and retrace its path to the loading point at a speed of 400 to 600 f.p.m.

Twenty, forty, sixty trips per hour—one hundred, two hundred, sometimes even a thousand feet between digging and dumping points.

Down to a minimum go the outlay for plant and the operating costs for labor, power and maintenance; down to rock bottom goes the cost per ton per foot hauled.

And there are "Crescent" Drag Scrapers to meet every capacity requirement: 1/3 cu. yd. to 12 cu. yd., with capacities, varying with size and with haul, from 10 to 800 tons hourly.

Write for 72-page Catalog.

Sauerman Bros., Inc.
474 S. Clinton St., Chicago

SAUERMAN

LONG RANGE MACHINES FOR EXCAVATING STORING AND RECLAIMING

The Excavating Engineer

About Excavating Projects — By Excavating Men — For Excavating Men — The World Over

25 Cents Per Copy — One Dollar Per Year

Vol. 25 — JULY, 1931 — No. 7

CONTENTS

Articles

Cutting Through Mount Olympus 330
Detroit Basements 340
Dug up Here and There 334
French Contractors Razel Freres tell why they prefer drag-shovels 331
Records Made by Bechtel Kaiser Co., Ltd., on Western Gas Co. Pipe Line 327

Field Notes

Quick and Useful Horizontal Tank Chart, A 336
Dynamiting for Fill Settlement 336

Equipment You Ought to Know About

New Case-Trackson Tractor 337
New Heisler Oil-Electric Locomotive 337
New Hydraulic Roll-Over Scraper 337

Editorial

The Business Situation 338
State Highway Construction Shows Increase in Thirty-four States 339

Shots From the Firing Line

Bidding on Cle Elum Dam, Yakima Project, July 10th 343
Mineral Production of the United States in 1930 343
Teach Pan-Americans U. S. Highway Building Methods 343
Bids Opened on Proposed Golden Gate Bridge 343
1932 Road Show to Detroit 345
New Gravel Consolidation 345
Hoover Dam Progress in Pictures 345
Prequalifications of Bidders Required by Oregon Law 346
Great Britain 346
Japan 346
Argentina 346
Chile Notes 346
Montreal and Vicinity 346
Toronto and Vicinity 346
British Columbia Notes 348
New England Notes 348
Philadelphia Notes 348
Anthracite Notes 350
Pittsburgh and Vicinity 350
Baltimore and Vicinity 350
Buffalo Notes 350
Virginia Notes 352
North Carolina Notes 354
Southern Notes 354
River Notes 356
Eastern Tennessee Notes 356
Ohio Notes 358
Detroit and Vicinity 358
Michigan Notes 359
Chicago and Vicinity 359
Indiana Notes 360
Northwest Notes 360
St. Louis and Vicinity 362
Kansas City and Vicinity 363
Kansas Notes 364
Nevada Notes 364
Washington Notes 365
Oregon Notes 365
California Notes 366

Book Reviews 368

PUBLISHED MONTHLY BY

The Excavating Engineer Publishing Co.

F. O. Wyse, Managing Editor — Arnold Andrews, Editor
E. M. Heuston, Advertising Manager.

South Milwaukee, Wisconsin, U. S. A.

ADVERTISING REPRESENTATIVES

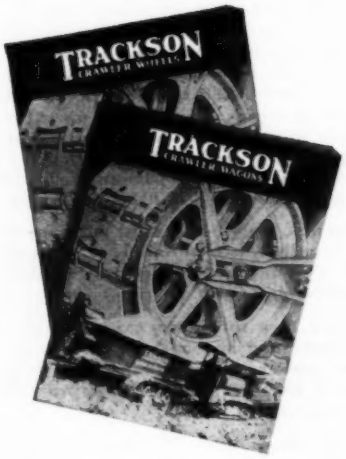
H. B. KNOX, Jr., 101 Park Ave., Room 1125, New York, N. Y.
V. G. CLYDE, 4446 No. Lincoln St., Chicago, Illinois.

Copyright 1931 by The Excavating Engineer Publishing Co.

For your convenience in writing to Sauerman Bros., Inc., you will find a card bound in this issue.

STRENGTH
Without Excess Weight

ALL STEEL CONSTRUCTION gives Trackson Crawler Wheels and Wagons greater strength with less weight. There is no excess load to haul around. Every pound is productively justified. Consider these further advantages of Trackson Equipment: The 7-yard wagon has a loading height of only 61½" without flareboard. Being a cart-type wagon it pulls easier, turns shorter and stops jack-knifing. A 26" clearance makes it easy to pull on and off the dump. A properly proportioned body makes it dump clean. The wheels are easy running and built for long life. The wearing parts are of heat-treated alloy steel, and are *readily renewable when worn*. These are but a few of the many Trackson features which combine to produce more satisfactory wagons and wheels for dirt-moving work. Let us tell you about them.



Either or both of these booklets will gladly be sent on request.

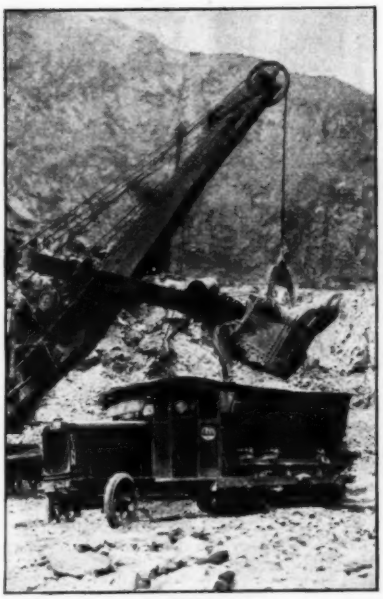
TRACKSON COMPANY
1321 So. First St., Milwaukee, Wis.

TRACKSON
CRAWLER WAGONS

For your convenience in writing to Trackson Company, you will find a card bound in this issue.

WHAT LINN STARTS ... LINN FINISHES

There's a difference between dependable, economical LINN performance and the performance of the ordinary vehicle. Between LINN patented flexible traction and ordinary traction. When minutes mean money, LINN saves time. Where the going is toughest, LINN starts and LINN finishes. LINN'S cost of operation and upkeep is low. Whatever your hauling job . . . logging, grading, road building, quarry stripping or general construction . . . you can use the LINN and make greater profits.



LINN Model 6-28 D being operated in "Pit" for United Verde Copper Company, at Jerome, Ariz. Pay load carried is copper ore, weighing ten tons—one of a fleet of LINN'S cutting costs in copper mining.

LINN

MANUFACTURING CORPORATION

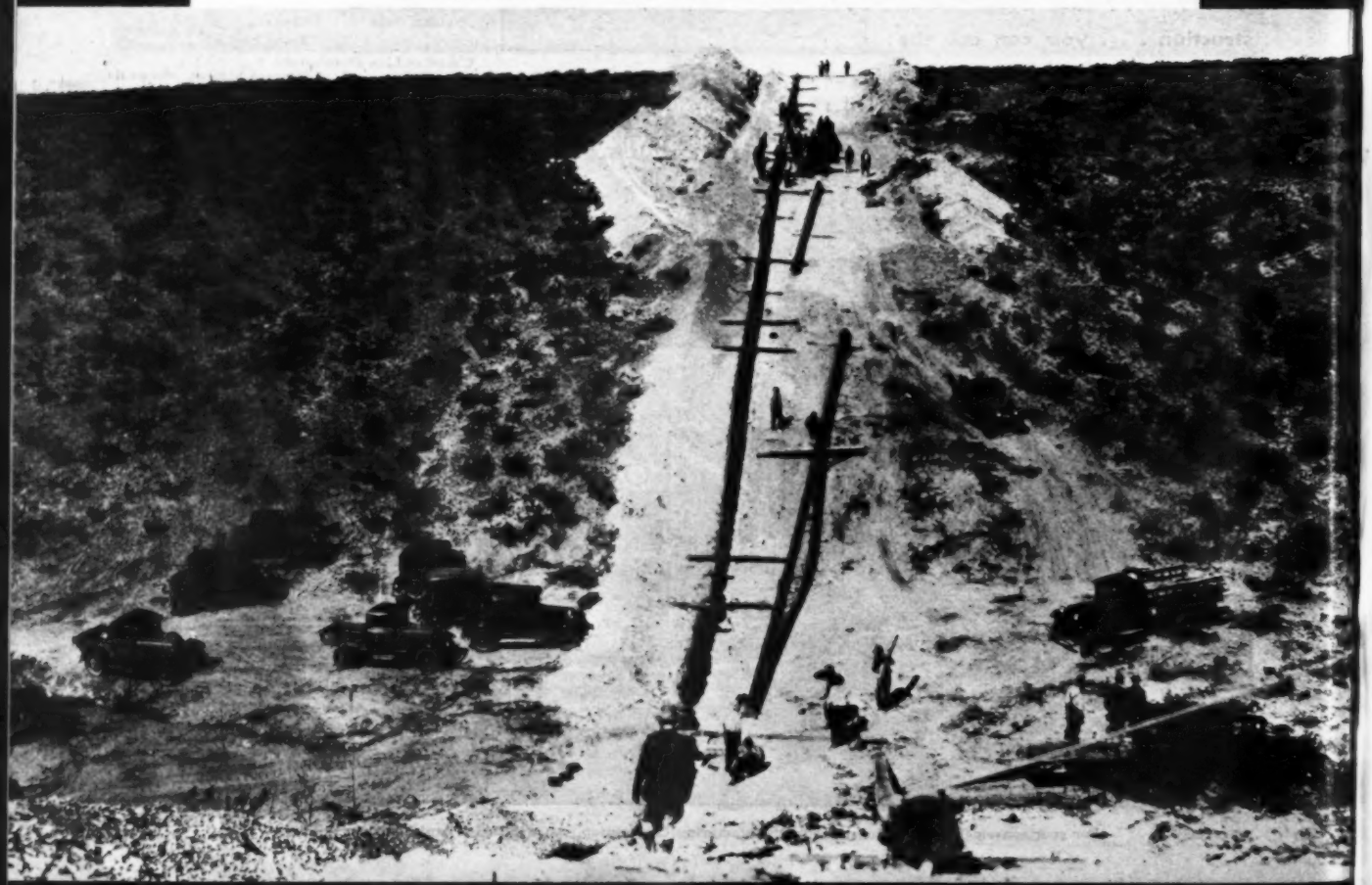
(Division of La-FRANCE-REPUBLIC Corp.)

Represented in:	*Factory*, Morris, New York
New York City	Kansas City, Mo.
Skowhegan, Maine	Little Rock, Ark.
New Haven, Conn.	Sioux Falls, S. D.
Johnson City, Tenn.	St. Paul, Minn.
Pittsburgh	Salt Lake City
Louisville, Ky.	Denver
Chicago	Los Angeles
St. Louis	Portland, Ore.
Omaha, Nebr.	Spokane
	Forty Fort, Pa.

Canadian Linn Distributors:
Mussens Limited, Montreal

For your convenience in writing to Linn Manufacturing Corporation, you will find a card bound in this issue.

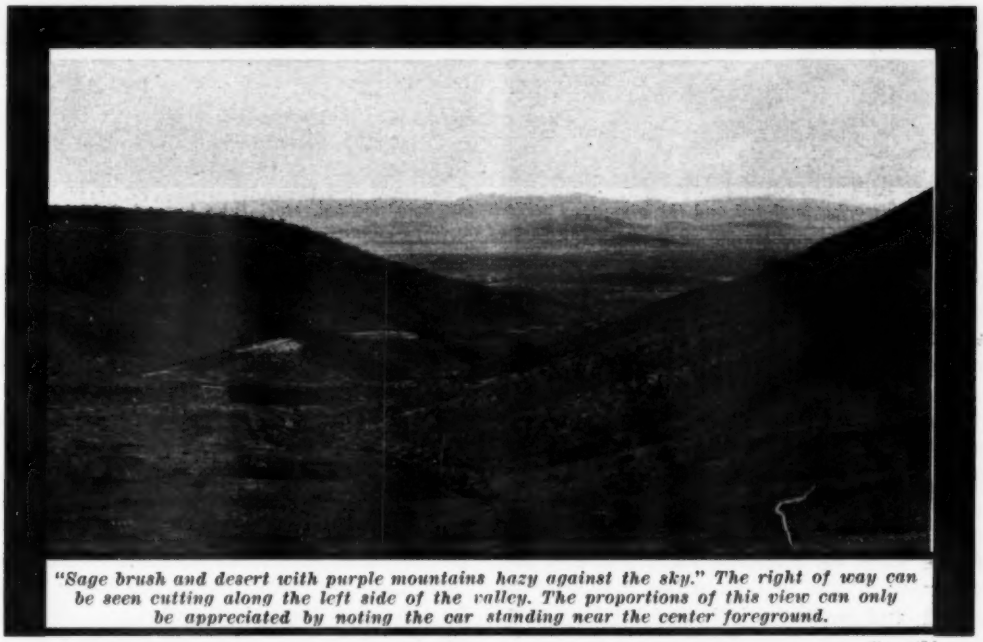
Over mountains and deserts, uphill and down dale, Bechtel Kaiser pushed these pipe lines through in record time.



The EXCAVATING ENGINEER

Vol. XXV JULY 1931 No. 7

Records made by Bechtel Kaiser Co., Ltd. on Western Gas Co. PIPE LINE



"Sage brush and desert with purple mountains hazy against the sky." The right of way can be seen cutting along the left side of the valley. The proportions of this view can only be appreciated by noting the car standing near the center foreground.

290 miles of 16, 12¾, 10, 8 and 6-inch pipe laid to connect El Paso, Texas, Deming, New Mexico, Douglas and Bisbee, Arizona, and Cananea, Mexico

TODAY'S engineers and builders—constructing one of the greatest transportation systems the world has ever seen—are said to be the "Empire Builders" of a new era. In this transportation system rests the future of a great industry, dedicated to the task of providing a dependable supply of natural gas for tomorrow's industrial and domestic consumers. This natural gas industry has risen to fourth place in size among the public utilities, exceeding the telephone and telegraph industries.

Improvements in pipe line construction have been of invaluable importance to the rapid growth of this new industry. One of the latest results of this improved construction is evidenced in the recent completion, two months ahead of schedule, of the pipe line system of the Western Gas Company, El Paso, Texas, a subsidiary of the El Paso Natural Gas Company.

New Western Gas Co. System to Supply Gas to Copper Producers

This Western Gas Company's recently completed lines consist of a system of 290 miles of 16, 12¾, 10, 8 and 6 inch pipe lines laid from El Paso, crossing the Franklin Mountains 16 miles north of El

Right of way work completed and the pipe gang stretch the long, welded, steel tube toward their destination as many as 6.42 miles per day.

Paso, thence clear across New Mexico via Deming, and into Douglas and Bisbee, Arizona, thence into Cananea, Mexico. This system is to furnish a dependable supply of gas from the El Paso Natural Gas Company at El Paso to the rich copper producing industry at Douglas, Bisbee and Cananea.

A general contract for the pipe line construction of this system was awarded to Bechtel Kaiser Company, Ltd., of San Francisco and Oakland. The owner gave official notification for this contractor to commence work on January 26, 1931, and for the construction of the system to be completed by July 15, 1931, and gas to be delivered by August 1, 1931. This system was completed and gas was in the lines by May 26, 1931, or within 65% of the allotted time as called for by the contract.

Work Split to Gangs

This work was apportioned to four gangs. First gang connecting El Paso, to Deming, New Mexico, with 7½ miles of 16 inch pipe and 88 miles of 12¾ inch pipe; second gang connecting Deming with Douglas, Arizona with 130 miles of 12¾ inch pipe; third gang connecting from the junction near Naco, Arizona with Cananea, Sonora, Mexico, with about 38½ miles of 8⅝ inch pipe; and the fourth gang connecting Douglas with the junction and Bisbee, Arizona, and the copper smelters with about 27 miles of 10¾", 6⅝" and 4½" pipe through populated sections and mining districts.

Subcontracts were awarded by Bechtel Kaiser Company, Ltd. to A. O. Smith Corporation for the electric welding of the 7 miles of 16 inch and 219 miles of 12¾ inch pipe in connection with work of gangs one and two; to J. F. Shea Company and R. A. Conyes Company for hauling and stringing all materials on the American side of the border; to Sullivan Brothers, Incorporated, Long Beach, California, for hauling materials on the Mexican side of the border. The work of gang three in Mexico, exclusive of the welding, was done by the owner using the contractor's equipment and supervision. The work of gang four was subcontracted to Hulihan and Chestnut Company, Long Beach, California. The trenching and backfilling for gangs one and two was subcontracted to Geo. W. Hood, Huntington Park, California.

Pipe for gangs one and two was furnished by A. O. Smith Corporation; and for gangs three and four by the Republic Iron and Steel Corporation. All of the Smith pipe was electric welded under subcontract with the A. O. Smith Corporation. All of the Republic pipe was acetylene welded—on the Mexico side by Bechtel Kaiser Company, Ltd., and on the American side by Hulihan and Chestnut. All pipe received protective coatings where soil conditions indicated the necessity.

Gas+Air Shovel Draglines Do the Heavy Grading on Right of Way

The preparation of right of way on gangs one and two was accomplished with two Bucyrus-Erie GA-2 Gas+Air 1¼ yard combination shovels and draglines working double shifts and assisted with

three Sixty Caterpillars, one Ateco Bulldozer, 2 Graders, and one LeTourneau Bulldozer.

Considerable Equipment Necessary

For such high speed production as was accomplished on this development it is necessary to have considerable equipment and man power. During the greater part of the construction operations, between 1,000 and 1,500 men were employed by the four gangs. The major grouped equipment on the system consisted of:

2 Heavy power shovels.
8 Automobiles.
53 Ford units.
19 White and Mack trucks ranging from 3 to 20 ton capacity.
28 Caterpillar tractors with miscellaneous attachments thereto—20 to 60 H.P. capacity.
35 Graders, bulldozers, earthmovers, etc.
2 P. & H. Pipe Hustlers.
2 Backfillers.
15 Paint Kettles.
20 Air Compressors—mostly Ingersoll Rand.
17 Electric Welding Generators.
5 Acetylene Generators.
8 Buckeye Ditching Machines.
Considerable miscellaneous smaller tools.

Progress Records Made Include Completion of 6.42 Miles by Gang One in a Single Day

The remarkable speed made on this pipe line construction was chiefly due to the co-operation of the owners and engineers as well as the efficient co-ordination and co-operation of the subcontractual relationships. The speed with which the welding as done under the Smith Weld process preceded the other operations, was also a factor in making possible the completion of this line two months ahead of schedule.

Two of these Bucyrus-Erie Gas+Airs equipped for use as shovels or draglines completed the heavy grading required on 225½ miles of the job in less than three months.

The average progress for the system was 2.24 miles per day.

Gang one started laying pipe on February 22nd, and completed on May 22nd, averaging one mile per day.

Gang two started laying pipe on March 3rd, and completed on April 15th, averaging approximately two miles per day.

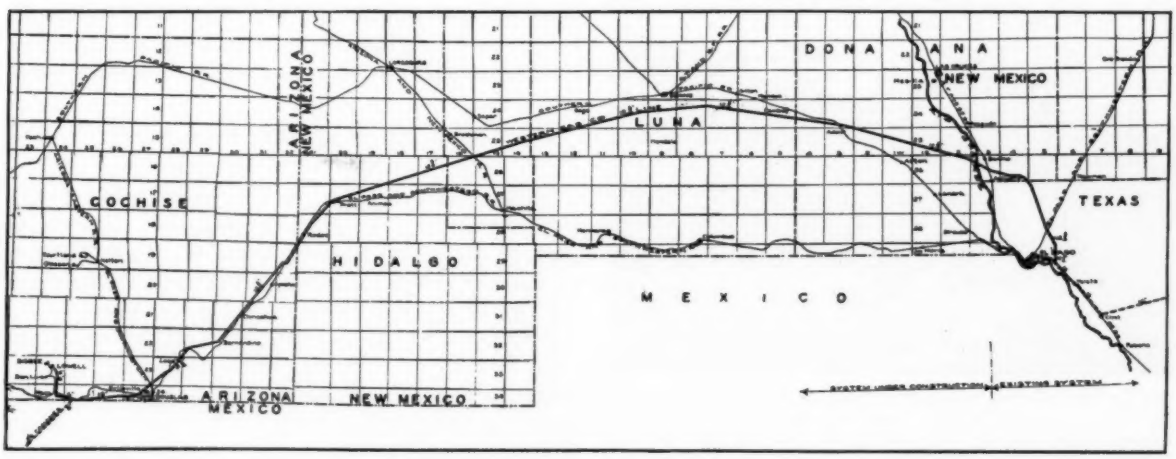
Gang three started laying pipe on April 3rd and completed on May 20th, averaging ¾ mile per day.

Gang four started laying pipe on March 23rd and completed on April 30th, averaging ¾ mile per day.

The longest length of 12¾ inch solid welded pipe completely constructed in any one day was for Gang one—33,900 feet or 6.42 miles on May 8th; and for Gang two—30,800 feet, or 5.84 miles on April 24th.

The largest day's work on this 12¾ inch pipe of Gangs 1 and 2 combined was on May 16th for 43,600 feet or 8.26 miles.

(Continued on Page 367)



Map showing route of the new pipe lines.

Cutting Through Mount Olympus

Fitzgerald Brothers Construction Company remove 65 foot rock hill from main street of Troy, New York.

Mount Olympus, often visited by scientists, moves to make way for main city thoroughfare.

SINCE the days of the one hoss shay and the tandem bicycle traffic along Fifth Avenue, the main street of Troy, New York has had to circle around Mount Olympus.

About one-half mile north of the center of the city this "Mount of the Gods" rose 65 feet high, 600 to 700 feet long and 360 feet wide. It was of peculiar rock formation, so peculiar in fact that scientists came from Norway, Sweden, Germany, France and England to study its formation. They came to the conclusion that Troy was once covered by an ocean for, as explained by Rudolph Ruedemann, Paleontologist for the State of New York, fosils in the rock structure show it to have been, countless ages ago, the meeting place of tiny sea animals called graptolites, similar to the coral builders. The rock is called by geologists *Sessile Argillite* and has small deposits of carbonate of iron and anthracite. It is very hard, being undurated shale hardened by infiltration with silicon.

Chicago Pneumatic, Ingersoll-Rand and Sullivan drills bore into Troy's "Mount of the Gods" in this real job of "face lifting". The drilling crew stayed on the job till the end because shots were small and mats were required to keep flying rock from damaging nearby buildings.

In the pioneer days Indians used the rock for their signal fires. Over a hundred years ago the rock was owned by the Vanderheydens who built an octagonal building on the top called the "Round House," quite an attraction in its day because of the wonderful view of the surrounding country and the excellence of its refreshments. In 1830 this building was burned and has never been replaced. Since that time the rock has only been used to carry a geodetic survey marker and as a children's playground.

Clearing Away Rock Helps Solve Unemployment Problem.

Year after year the question of its removal has come up before the City Council, but no definite plan of action could be decided on. Last fall the problem of unemployment led to a more determined consideration of the problem. Bids were taken, divided so as to show the cost for the work done with and without power excavators. The Council, finding the bids surprisingly low, especially on the machine work, decided to proceed at once to remove the obstruction of this ancient landmark.

(Continued on Page 340)

Mr. Emile Razel

French Contractors RAZEL FRERES tell why they prefer dragshovels

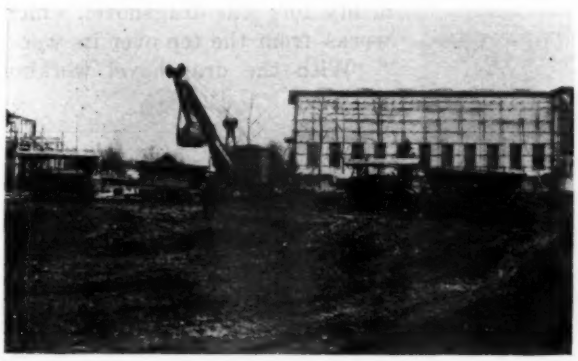
Mr. Réné Razel

Old fortifications of Paris removed by these well known contractors to make way for city's growth

ONE OF the best known contracting firms in Paris is L'Entreprise Razel Freres, (Razel Brothers Enterprise) 96 Rue Regnault, and it is at present difficult to go far in Paris without seeing their name widely advertised in connection with some excavation.

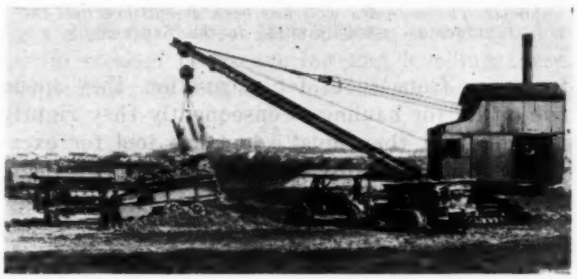
There are a large number of new buildings being constructed at the present time in Paris, and Messrs. Razel have obtained a considerable amount of the excavation and foundation work necessitated by these new constructions and to be done by mechanical means.

In 1922 Messrs. Razel Freres purchased their first Bucyrus-Erie 30-B steam shovel equipped with a bucket of 1-cubic yard capacity (765 litres). Shortly thereafter they became the owners of a similar machine, a Ruston-Bucyrus No. 10 steam dragline. Later they purchased another Bucyrus-Erie 30-B. With these machines they have carried out a very large proportion of the excavation and levelling off of the old fortifications of Paris making available a new belt of ground all around Paris for building purposes or any other useful object.



Messers. Razel clear the site for the Exposition Coloniale.

In 1929 in view of the increase of construction work in Paris and the use of the mechanical excavator for foundation work, Messrs. Razel Freres, pioneers of this method of working in Europe, decided to modernize their equipment. To achieve this they purchased a Bucyrus-Erie 1030 Diesel machine with dragline and dragshovel equipment.



Building a dike for the new Port of Paris at Gennevilliers, France with Ruston-Bucyrus No. 10 steam dragline loading to Caterpillar drawn Euclids.

Diesels Show Considerable Economy in Fuel Costs

When they abandoned steam for Diesel they were not long in noting the considerable economy of this latter form of motive power. Having thoroughly tested out this machine they acquired two new Bucyrus-Erie 1030 Diesel dragshovels in 1930.

It is well to point out that while the two original machines were steam shovels with dragline equipment, the two machines added to the fleet in 1930 are Diesel dragshovels.

Messrs. Razel Freres are at the present time executing the greater part of their foundation work with the dragshovel, and among other advantages they thus obtain a very much lower hauling cost.

On this subject they have very precise ideas, a brief recapitulation of which should be of interest to all readers, coming as they do from a contractor who has studied the efficiency of all systems of excavation and transport for many years, and who holds first place in the contracting world in one of the largest capitals in the world.

Dragshovels Used to Obtain Reduced Hauling Costs

They have found that, on their operations, the cost of hauling is very much more important than the cost of excavation, their records showing that,

Excavating Bastion 91, Boulevard Messena, in demolition of the old fortifications of Paris. This shows the final clean up of the last ridge of earth embankment by the Bucyrus-Erie shovels. The masonry wall has been demolished and the stones are piled up ready for hauling away.

for every franc spent for excavation, they spend five or six for hauling. Consequently they rightly consider that they must adopt the tool for excavating which permits them to employ the least onerous transport system.

Hence, they use the dragshovel, which stands above its work and permits them to load their motor trucks and wagons on the street level and so avoid the extra expense involved in having to get them down into the pit.

Why Razel Freres Prefer Dragshovels for Their Operations

As Messrs. Razel put it, "In a general manner the foundations of Paris are too deep to permit a shovel to work in the bottom and load the trucks on the street level.

"Now, the dragshovel does load on the street level and thus avoids the necessity of establishing a ramp to give access to the bottom of the pit, and also permits speeding up of the transport. The trucks available in France cannot have the necessary reserves of power to mount the steep ramps as modern American trucks can, because of the French taxes on transport machines of high power.

"In an old city like Paris the main gas and electricity lines and sewers, etc., take up considerable space. From this fact, therefore, we find an additional advantage in the use of the dragshovel, since it can dig all around these obstacles, the operator being up above them and, therefore, able to control the work in a very precise manner. A shovel would be incapable of doing this work from the bottom of the pit.

"There is also the case of old masonry walls, etc.; a shovel in the bottom when it meets such obstacles can only uncover them at one side, and must then be transported by some means to the other side or wait for the wall to be demolished by hand. The dragshovel does not suffer in any way from these inconveniences, and can dig all around or from one side of the wall or masonry, thus making the obstacle much easier to demolish by hand. Also we are not held up and delayed by the obstacle as would be the case with the shovel in the bottom of the pit.

"The foundations to be made in Paris are often surrounded by old buildings and are of irregular form. This makes the work of a shovel difficult in the bottom of the pit, while a drag shovel can carry it out very much easier with the minimum of hand labor. It can cut with precision a complicated profile, digging out very narrow cuts or trenches from the same position which it occupies on the top of the bank without any difficulty, and (we repeat) with the minimum of material left in place to be taken out by hand labor.

"In narrow pits the shovel, situated in the bottom, is incapable of making the curves necessary to get round obstacles or to follow the prescribed contour, while on the contrary this presents no difficulty for the dragshovel, which works from the top over its work.

"With the dragshovel working

Note the irregular shapes required for Paris foundations as shown at the left. Messers. Razel prefer drag shovels for this type of operations and outline their reasons in the accompanying article.

This is the type of fortification being removed by Razel Brothers. The picture shows the top of the masonry wall, type of earth embankment and, at the right, the moat. This view was made several years ago before Messers. Razel worked out the plans outlined in our articles for most economical handling with shovels and draglines.

from the top, the danger of falling into old cellars or underground passages does not exist."

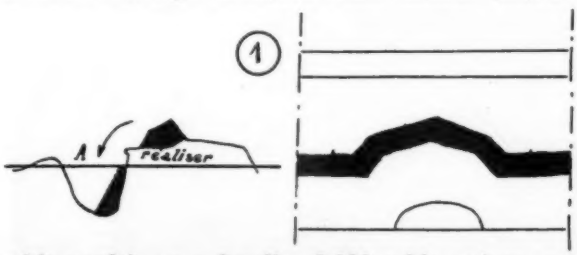
Messrs. Razel have numerous other reasons favoring use of the dragshovel instead of the shovel, but there is not sufficient space to go into them all here.

Excavations with Dragshovel Average About 16½ Feet. Hard Digging Plentiful.

The 1030 dragshovels are at work almost continually in or around Paris on foundations, and they have carried out foundation excavations with success in a variety of different materials up to a depth of 5 metres (16.4 feet) on the average, and which is exceeded in a number of places.

Considerable of the excavation has been in very hard ground. The subsoil of Paris is composed to a large extent of a yellowish white rock very hard and very difficult to excavate, called *"Pierre a Platre"*, or in England very often *"Paint Rock"*.

The 1030 dragshovel on this work generally does from 40-50 cubic yards per hour (30-40 cubic metres) according to the material being dug. Razel Freres estimate on the basis of an 8-hour day that their Bucyrus-Erie 1030's as shovels give them an average of 10,000 cubic metres (13,080



cubic yards), as a dragline 9,000 cubic metres per month (11,772 cubic yards). They state that they can handle 100,000 cubic metres of excavation per shovel per year (130,800 cubic yards). Output figures on their Bucyrus-Erie 30-B steam show a production as shovel of 12,500 cubic metres per month (16,350 cubic yards). As a dragline this machine gives them 9,000 cubic metres per month (11,772 cubic yards). The Ruston-Bucyrus No. 10 steamer produces 25,000 cubic metres per month (32,700 cubic yards) and as a dragline 18,000 cubic metres per month (23,544 cubic yards).

The motor trucks take a load of about 4.5 cubic metres (5.89 cubic yards).

Truck Service Carefully Organized to Secure Maximum Efficiency

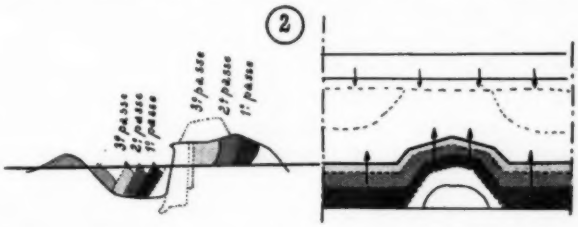
Messrs. Razel have made a very careful study of methods of transport, and the service of trucks to the shovels is perfectly organized.

When Messrs. Razel find a good operator they keep him—for instance, M. Marcelin, their chief operator, has been with them for more than seven years. The care and upkeep of the shovels which is naturally of the highest importance, is carefully supervised by M. Franc, who has also been with Messrs. Razel for many years.

The Bucyrus-Erie Atlas-Imperial Diesel engines on their Diesel machines have proven to be exceedingly economical and the consumption of fuel oil for each is about 6 litres (5.4 quarts) per hour for difficult and continuous work.

How Razel Freres Remove Old Fortifications

In connection with removal of the old fortifications of Paris Messrs. Razel Freres inaugurated a special method of excavating and levelling these fortifications by means of machines. The problem



present in the demolition of these fortifications was the question of best utilizing the ground forming the scarp and counterscarp to fill the moat and thus re-establish the original ground level. The reclaimed area was thus made available for buildings, parks, streets, etc. The thickest portion of the embankment, situated on the interior of the fortified ramparts, was called the bastion. This was supported by the fortification wall or the scarp wall. Outside this came the moat. The narrow portion of the embankment situated on the outside of the moat was called the counterscarp.

The height of the counterscarp or embankment beyond the moat is approximately 1 meter (3.28 feet) by 25 meters (82 feet) overall width. The moat, about 15 meters (49 feet) wide at the top, was dug about 7 meters (23 feet) below the normal ground level. The stone wall is 10 meters high

(Continued on Page 367)

Dug Up Here and There

On the San Vicente Trail in Columbia

NOT long ago Mike Schoste, Assistant Chief Engineer for an oil company operating in the tropics, dropped in to see our Philadelphia correspondent on his return from Colombia, South America. During his visit he brought out the accompanying pictures showing some of the work on the San Vicente Trail from Barranca Bermeja to San Vicente. This was an old pack mule trail inland from the Magdalena River starting at Barranca Bermeja and leading to San Vicente, Bucaramanga and the large agricultural plateau—famous for its coffee plantations. On this old trail the oil company is building a permanent highway at cost for the Departmental Government. The length of this highway is 96 kilometers, averaging about 10,000 cubic meters per kilometer—or in our way of figuring sixty miles, averaging 21,000 cubic yards per mile, which we consider in the States a nice grading job.

The oil company has a concession from the Magdalena River eastward an area of 35 by 80 miles. They are using for the oil development work eight Bucyrus-Eries: one Type A, two 20-B's, one Type B, two Gas + Air's and two Type 1030's. The two 1030 gasoline machines are working on the San Vicente Trail (as per the pictures). They are loading into McCann Griggs Industrial Cars which are hauled by Brookville gas locomotives. Mr. Schoste said that in Colombia around 1918 roads were built by hand. After the power shovels were installed the cost was cut to less than half the unit cost by hand excavation methods.

We wish Mr. Schoste every success in his new undertaking, which will probably be in Persia.

NEAR Limburg, Holland, the Bucyrus-Erie D-2 Diesel dragline shown in the accompanying illustrations is working in heavy, sticky Limburg clay. It is building a canal along the River Maas, to serve in carrying navigation from this Dutch mine district to lower stretches of the Maas where the river channel is large enough to carry the barges. In this section to be improved the Maas has many bends and in several places is very shallow. It was, therefore, found more economical to cut a straight canal alongside the river rather than attempt to dredge and maintain a channel in the river itself.

In Holland this heavy clay goes into six-yard cars at the rate of two buckets per minute.

SUBBING for C. W. Marshall on the C. R. I. & P. work, E. W. Kolterman had a healthy slice of heavy excavation near Hamilton, Missouri. This work was practically all rock, which Mr. Kolterman loaded to 5-yard Linn tractors with his Bucyrus-Erie Diesel+Air. In spite of the hard digging, a sample of which is shown in the picture, Mr. Kolterman tells us he loaded as much as 800 yards in 10 hours.

On the New C. R. I. & P. Grade

WHILE back filling on a sewer job at Troy, New York, Clemerite Brothers dropped into an old clay dam so soft that one of the cats of their Bucyrus-Erie Gas+Air dropped down nearly out of sight. There was still some traction, but working the buried cat only pulled the machine down farther into the mud. Though well over on her ear, the shovel was still able to dig and succeeded in clearing a space completely around the machine.

Fortunately, a second Gas+Air owned by Fitzgerald Brothers of Troy was available and was quickly on the way to the rescue. On arrival a chain was hitched to the cat in the sink hole and attached to the dipper of the Fitzgerald machine. With a lift from this and a push from the crowd on the Clemerite machine the cat came up out of the sucking mud sufficiently to permit dropping a tie under the tracks.

That was all that was needed — with the chain out of the way the Clemerite Gas+Air pulled out easily under its own power.

Floyd Martin was at the controls of Fitzgerald's machine while Henry Oberelli piloted the Clemerite Brothers' shovel.

Cleaning Thirteen Miles of Illinois Ditch.

HERE IS a picture showing one of Contractor S. W. Hardwick's 1035 draglines digging drainage ditch near Thomasboro, Illinois. Completed a year ago, this work for the Beaver Lake Drainage District, included approximately 600,000 cubic yards of excavation. It was started on November 1, 1929. The work consisted of cleaning out an old ditch for a distance of 13 miles, the bottom varying from 6 to 16 feet, and the yardage running about 100 cubic yards per station. The opening up of this Beaver Lake ditch will take care of the drainage of an area approximately 10 miles long and 5 miles wide. Engineer Reed Evans of Champaign, who had an active part of supervising this work, tells us that the 1035 is "one of the finest machines for this type of work I have ever witnessed."

In deep. *To the rescue.*

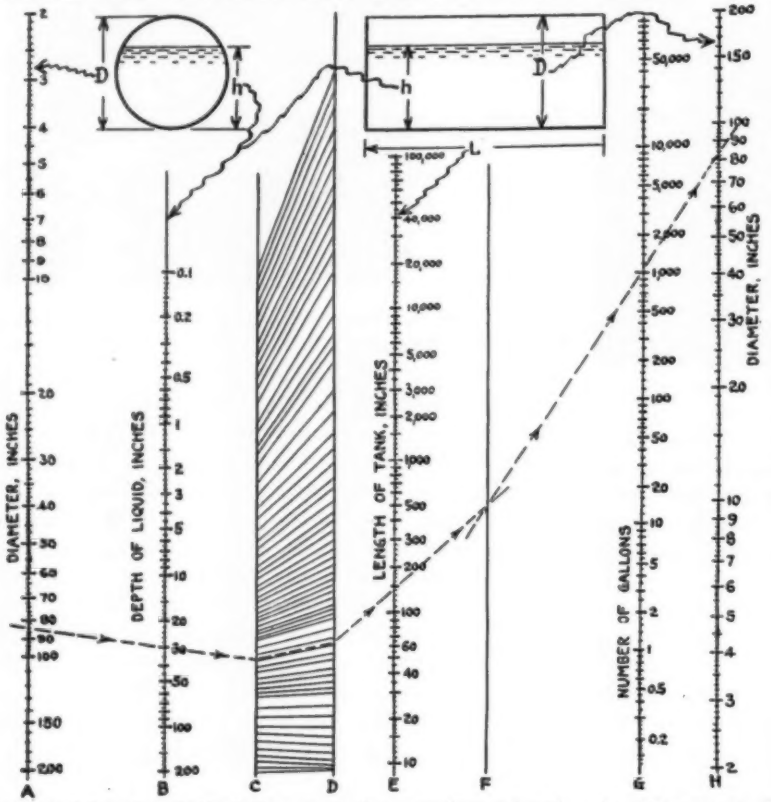
Clearing away. *Up and out.*

FIELD NOTES

A Quick and Useful Horizontal Tank Chart

HERE, at last, is a chart that gives the gallons of liquid in any horizontal tank without the use of tables, formulas, figures, or computations.

Simply start at the left and zigzag a ruler or thread across the chart three times, as demonstrated by the dotted line and the number of gallons is immediately found in Column G. For example: How many gallons in a tank 84 inches in diameter, the depth of liquid being 30 inches, and the length of the tank being 142 inches?



Run a straight line through the 84, Column A, and the 30 in Column B, and locate the intersection with Column C. By means of the eye follow the radiating "guide lines" to Column D, locating a second point of intersection. From this latter intersection run through the 142, Column E, and locate the point of intersection in Column F. Then from this point run over to the 84, Column H, and the intersection in Column G will be found to be close to 1,050 gallons, which is the answer.

One of the great advantages of this chart is that it takes care of any depth of liquid from 1/10 of an inch to the full capacity of the tank. All guesswork is eliminated. To make the chart absolutely clear the writer has included sketches showing the diameter of the tank, D; the depth of liquid, h; and the length of tank, L, with wavy arrows leading from them to the proper columns. By following them, no mistake can be made.

The range of the chart is amply wide. It will take care of any diameter from 2 inches to 200 inches and of any length of tank from 10 inches to 100,000 inches.

This chart will give an answer much more quickly than tables or formulae. It is surprisingly accurate. It is more complete than tables because it takes care of every dimension between 2 inches and 200 inches, whereas tables generally skip many diameters and lengths, giving only 24 inches, 28 inches, 32 inches, 34 inches, etc.

To avoid confusion all dimensions are given in inches.

Since Column E takes care of lengths of tanks up to 100,000 inches it is plain that not only will this chart compute tanks but it will include long pipes whenever it is desired to compute either the full capacity of such pipes or their partial capacity. 100,000 inches is equal to 8,333-1/3 feet.

Inversely the chart may be used very conveniently for determining the length of tank necessary to hold a given number of gallons where the diameter of tank and depth of liquid are known or fixed quantities as is often the case. The method of applying the chart to problems of this character is so obvious that further directions are unnecessary.

—*W. F. Schaphorst, M.E.*

Dynamiting for Fill Settlement

Discussing the present widespread interest in accelerated fill settlement, Larry F. Livingston, explosives engineer, E. I. du Pont de Nemours & Company, points out that the American public now demands hard surfaced roads on as straight alignment as possible between given points. Mr. Livingston said: "This necessitates in many cases, the building of highways across marshy, mucky areas and flat bottoms. According to the Committee on Grades and Embankments of the American Road Builders' Association, these swamps and marshes represent the most treacherous areas over which modern highway embankments are constructed."

"The use of explosives is particularly successful in displacing underlying unstable material and in compacting embankments in such areas," Mr. Livingston continued.

"There are two distinct methods of doing this type of work. In general, one is to blast as large a ditch as possible along the center line of the projected highway. Such a ditch may be 30 feet wide and eight feet deep. Then fill in this ditch and pile up a sufficient quantity of material to cause a considerable natural settlement.

"The second method is to place the required fill on top of the marsh and to load the dynamite in the mud or muck underneath the fill material. The explosions push the muck to the sides and the fill settles into place. Shooting must be done at sufficient depth to permit the fill to drop to a firm base.

EQUIPMENT YOU OUGHT TO KNOW ABOUT

New Case-Trackson Tractor

THE NEW Model CD Case-Trackson Crawler Tractor has been announced by the *Trackson Company, Milwaukee,* manufacturers of the crawler. The unit is powered by the Case "CI" Tractor which is made by the *J. I. Case Company, Racine.* It has a low speed for heavy hauling, a medium speed for average jobs, and a high speed for light drawbar work and quick return trips.

The wide Trackson Crawlers provide sure footing and positive traction, which are necessary for work in loose dirt, sand, or cinders, in soft, slippery mud or snow, on steep banks, or in other difficult conditions. The ground pressure of the unit is approximately 4 lbs. per square inch, permitting it to work with ease where horses or trucks would be useless.

One of the notable advantages of this crawler tractor is the clean-cut, open design and wide clearance between the crawlers and the motor, leaving ample room for extra equipment, such as hoists, bulldozers, one-man graders, etc.

The crawlers are made entirely of steel, the track shoes cast in one piece of electric alloy steel, which has been heat-treated and hardened. The shoes are especially corrugated so as to provide maximum traction without injury to road surfaces.

Specifications include: Air cleaner of oil filter type; 3-bearing crankshaft drilled for pressure lubrication to all its bearings; separately cast cylinders fitted into engine block and easily replaced at small cost; swinging type drawbar; live axle drive maintaining Case regular tractor speeds of 2-1/3, 3-1/3, and 4½ M. P. H.; 4-cylinder, vertical, valve-in-head engine, bore 3⅞ in., stroke 5½ in.; normal speed 1100 R. P. M., sealed against dirt, yet all parts readily accessible; throttling, fly-ball type adjustable governor. Further details can be obtained by writing the J. I. Case Company at Racine, Wisconsin. Please mention *The Excavating Engineer.*

New Heisler Oil-Electric Locomotive

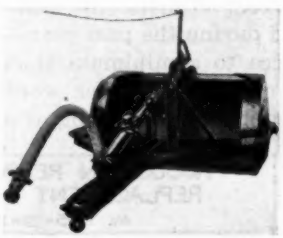
A NEW 60-ton, 360 horse power, oil-electric locomotive, for more efficient hauling and switching in open cut mines, etc., has been developed by the Heisler Locomotive Works, Erie, Pa. In a series of tests made with the New York Central's Dynamometer Car, on level track, it showed hauling capacity equal to that of a 100-ton steam locomotive—as indicated by the draw-bar pull of 47,800 pounds. A steam locomotive, when hauling an 80-car train at the speeds used in switching cars, must develop approximately 48,000 pounds draw-bar pull, which this 60-ton Heisler Oil-Electric developed in the tests at similar speeds. When on grades, the new oil-electric locomotive showed further increases in efficiency. In direct competitive test on a three per cent grade with 14-degree curve, the 60-ton Heisler Oil-Electric pulled 83 per cent more tonnage than an 80-ton super-heated steam locomotive.

It is claimed to burn only $2.50 to $3.50 worth of fuel oil in a day to do the same work on which a steam switching locomotive burns $20.00 to $30.00 worth of coal per day. Only an engineer is needed to operate it. For light work it may be operated by one engine and generator, giving the equipment a better loading and obtaining lower fuel consumption. Two 180 H. P. Buda Diesel engines deliver their power to two Westinghouse D. C. generators. Ample air for switching service is delivered by two Gardner-Denver duplex compressors.

Other sizes of this same type, powered with gasoline as well as Diesel engines will be available in 36-inch to standard gauges. Further details may be obtained by writing to the manufacturers. Please mention The Excavating Engineer.

New Hydraulic Roll-Over Scraper

A NEW addition to the LaPlant-Choate line of equipment for use with "Caterpillar" tractors, is a hydraulic Roll-Over Scraper. In general design it is similar to the conventional type of Roll-Over Scraper. The following advantages, however, are claimed for it by the manufacturer.



The hydraulic control gives the operator the ability to instantly control and vary the cutting depth, by merely shifting a lever from the seat. This instantly variable adjustment and the use of a narrower but deeper bowl, makes loading easier, and permits hauling of larger capacities with the same power unit. It also eliminates delays from the tractor stalling due to variation in soils while loading. It also makes it possible to rotate the bowl backwards after loading on its carrying runners to carry the load rather than to drag it. It also permits spreading in instantly variable depths. The load may be dumped in one pile, or spread in any desired layers. This scraper may also be backed up if desired.

A complete circular describing this unit will be sent upon request. Write to the LaPlant-Choate Mfg. Co., Inc., at Cedar Rapids, Iowa, mentioning this magazine.

EXCAVATING ENGINEER

A Monthly Publication Devoted to Excavating and Allied Subjects

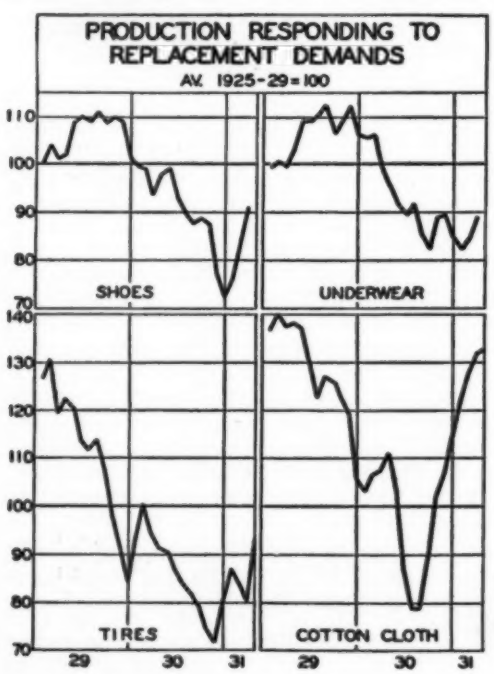
REGULAR SUBSCRIPTION: $1.00 a year for 12 months.
SPECIAL SUBSCRIPTION: Upon application on card inserted in this number, The Excavating Engineer will be sent frequently (not regularly) free of charge. Only for those engaged in the industry of excavation.

THE EXCAVATING ENGINEER PUBLISHING CO.
F. O. Wyse, Managing Editor—Arnold Andrews, Editor
E. M. Heuston, Advertising Manager.
South Milwaukee, Wisconsin
Printed in U. S. A.

The Business Situation

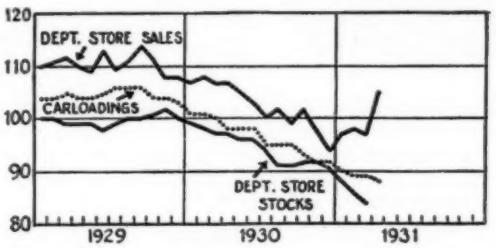
WILL ROGERS is reported as saying that "business has turned the corner so many times it has gotten dizzy." It is scarcely a fair statement, but it is in line with a great deal of the pessimistic business sentiment that is rife at the present time. It is a psychological reaction of business men in general, after the downward coast of business activity which is known as a depression. It is a mental condition that allows all but the keenest mentalities to be governed by the surface of things rather than by the underlying trends.

At the peak of unusual business activity stocks of consumer goods are always very large—and were in 1929. During the last stages of depression—and during the past year—normal replacement reduces to a minimum stocks of almost all consumer goods. In other words consumer goods consumption moves along at a pace in excess of production and leads to increased business activity all through the fabric of modern commerce.



Replacement demand of four almost universally used consumption goods as shown by production record.

After a long period during which everyone has made the articles on hand last as long as possible, replacement of clothing and similar articles is beginning to be more normal. Today we find consumption beginning to produce a demand for consumer goods that is being passed on to the manufacturer. For example, you will find today that department store stocks are being held at a very low point, that the range of selection is exceedingly limited. Certain products have responded very definitely to this replacement demand. We reproduce in the first column below a chart prepared by the *Cleveland Trust Company* giving the production record of four consumer goods—shoes, underwear, tires, cotton cloth. This replacement demand is an indicator of the present stage of the business cycle.



This chart prepared by the National City Bank of New York shows the decline in Department Store stocks that has taken place since January, 1929. It is interesting to note that Department store sales increased during the first four months of the year in spite of the steady decline in their stocks of goods.

Cheap money and gradually increasing activity in the building of residences are powerful factors in aiding business improvement, and we have both with us today.

It is only natural that slight recession should take place as the business curve bends upward. We should fortify ourselves against looking upon a seasonal trend as an underlying one, even although that seasonal fluctuations be a little more severe than normal. The month of May has written into the record a decline which is, in the main, seasonal, although authorities agree that after correction for normal seasonal variation the curve bends slightly downward.

Forward movements of certain major construction classes during May are pointed to by *F. W. Dodge Corporation* in seven out of the thirteen territories which comprise the 37 states east of the Rockies. When contrasted with May of last year, records for the seven territories disclose goaheads during the month just ended in one or more of the three major construction classes, residential, non-residential, and public works and utilities.

The metropolitan area of New York was alone in reporting a gain over May 1930 in residential

contracts. Three districts, Upstate New York, Kansas City, and Texas produced gains in non-residential building over May last year. In public works and utilities five districts showed gains over 1930; they were the Middle Atlantic, Pittsburgh, Central Northwest, Kansas City, and Texas territories.

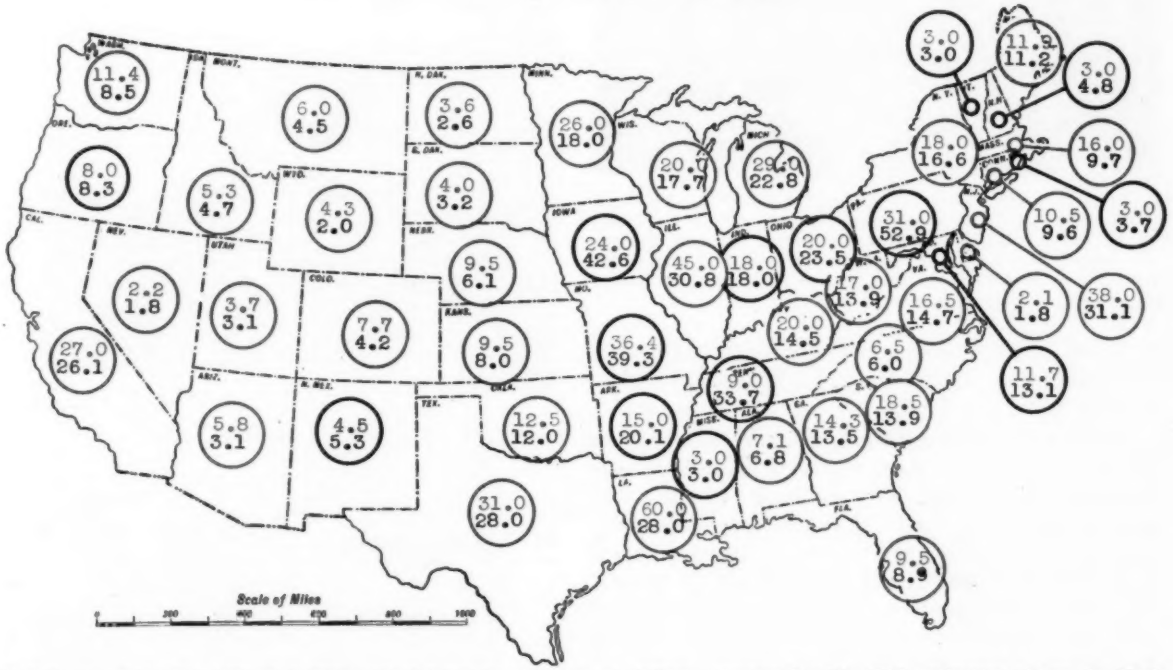
The total in new construction contracts for the month was $306,079,100. Public works and utilities with $108,948,400 took a slight lead over non-residential building which amounted to $108,231,-100. Residential building totaled $88,899,600 in the 37 states east of the Rockies.

Pointing out advances in the sections named and also the fact that May showed a larger loss from April than is customary, the *Dodge* statistical report says: "Though the general trend of construction still appears downward, there are important local exceptions. In the past these local exceptions, particularly as respects the Metropolitan New York territory, have signalized major turns in the general trend several months in advance. Whether the present conditions in this territory as respects residential building may now be foreshadowing a definite revival for the country at large is difficult of determination. At any rate we are now approaching that period of the year when comparisons on a floor space basis, with the corresponding months of 1930 may be expected to look more favorable so far as residential building goes."

New Orleans territory is unique in that its cumulative total of $58,408,700 in total construction

(Continued on Page 367)

State Highway Construction Shows Increase in Thirty-Four States



Red figures show the estimated 1931 expenditures in millions of dollars, compared with 1930 estimates shown in black. Thirty-four states (red circles) have 1931 estimates which exceed last year's. Based on figures compiled by American Road Builders' Association statistical Department.

THE ABOVE MAP shows proposed state highway construction for 1931 compared with 1930 construction, according to reports furnished the American Road Builders' statistical department by the various state highway departments. Red circles indicate increased appropriations over 1930.

Including maintenance in adition to the figures shown above for construction the State expenditures for 1931 total $963,871,000 as compared with $913,778,000 in 1930. Estimates of county expenditures for construction and maintenance total $578,-010,000 for 1931 as compared with $639,167,000 for 1930.

Louisiana leads the states in expenditures for construction with an estimate of $60,000,000. New Jersey follows with $38,000,000; Missouri is in third place with $36,400,000 while Pennsylvania and Texas tie for fourth place with $31,000,000 each.

As 1931 is a particularly favorable year to buy roads the proposed expenditures for this year indicate a very favorable increase in mileage of improved roads.

Cutting through Mount Olympus

(Continued from Page 330)

The contract was let to Fitzgerald Brothers Construction Company, well known Troy contractors, and the work started immediately. The first blast was set off with fitting ceremony by Mayor Burns, and an audience averaging some 300 people watched the operations daily.

Cut 60 Feet Deep for 50 Foot Roadway

The depth of cut through the peak is 60 feet and the new road will make a 3.4% grade in one direction and an 8.6% grade on the other. The roadway is 50 feet wide with side slopes 1 to 4. Coefficient of rock hardness is 1.5.

Hard digging, this home of fossils, but the Gas+Air made quick work of the ten foot layers pried off by dynamite. Two truck spotting helped the shovel clean up quickly. Note the mat at the feet of the man in overcoat and hat. These, held down by chained bundles of loose ties, prevented damage by the blasted rock.

Drilling and blasting were an important problem of the work in this hard material located close to the heart of the city. Two Sullivan 110 cubic foot and one Ingersoll Rand 220 cubic foot compressors were used with Chicago Pneumatic, Ingersoll Rand and Sullivan drills. Holes were drilled on about 5 foot centers to a depth of 12 feet. They were loaded with 40% Red Cross du Pont dynamite, 5 pounds to the hole, and fired in 5 hole shots.

Air Supplied to Drill Sharpener From Gas+Air Shovel

An Ingersoll Rand drill sharpener was used for sharpening the drill steel. It was located in Fitzgerald Brothers' garage and hooked up to one of their Bucyrus-Erie Gas + Air shovels which furnished the compressed air required.

A second Bucyrus-Erie Gas + Air loaded out the rock in 10 foot lifts. The digging was tough because of the care necessarily used in shooting and the hardness of the material, but the Gas + Air, with L. S. Martin at the levers, seemed to enjoy showing off to the appreciative audience and kept the fleet of five 4-yard Autocar trucks hustling. The rock was used to fill in low land in Troy so the removal of Mount Olympus served a double purpose toward civic improvement. Average length of haul was about one mile.

Average output of Gas + Air in this tough digging was 325 cubic yards per 9 hour day. Gas consumption was 45 gallons per day for the shovel. The three compressors took 101 gallons of gas a day and the fleet of five trucks averaged about 150 gallons daily.

In charge for the contractor was E. S. Fitzgerald. City Engineer Charles Morris supervised the operations for Troy.

The job, started January first, was completed shortly after the first of April.

Detroit Basements

LOUIS Garavaglia Company, Excavating Contractors of Detroit, make the dirt fly when they move in on a job. Here we see a couple of their recent jobs. The dipper view shows basement excavation for the Juvenile Division Detention Home at Forest East and Rivard Avenue. Below we find Mr. Garavaglia's B-2 loading trucks from a basement for the new Nurses' Home at Grace Hospital on Alexandrien Avenue between John R and Brush.

SHOTS FROM THE FIRING LINE

Bidding on Cle Elum Dam, Yakima Project, July 10th

SEALED BIDS (Specification No. 522) will be received at the office of the Bureau of Reclamation, Yakima, Washington, until 10 o'clock a. m., July 10, 1931, and then publicly opened, for furnishing labor and materials and performing all work for construction of the Cle Elum Dam and clearing the reservoir site, Yakima project, Washington. The work is located about 8 miles northwest of Cle Elum, on the Northern Pacific and Chicago, Milwaukee and St. Paul railways.

The principal items and estimated quantities involved are as follows: 134,000 cubic yards of stripping; 22,500 cubic yards of tunnel and shaft excavation; 1,552,000 cubic yards of excavation in open cut; 35,000 cubic yards of back fill; 1,200,000 cubic yards of earth and gravel embankment; 44,000 cubic yards of riprap and paving; 11,200 cubic yards of concrete in tunnel and shaft lining; 20,900 cubic yards of concrete other than tunnel and shaft lining; 20,000 cubic feet of pressure grouting; placing 3,390,000 pounds of reinforcement bars; placing 3,800 linear feet of 6 in. to 30 in. drainpipe; driving 12,860 linear feet of sheet piling; installing 575,000 pounds of metal work; and 2,700 acres of clearing.

This invitation for bids does not cover the purchase of materials which are to be furnished by the Government. Materials to be furnished by the contractor and those furnished by the Government are described in the specifications which will be a part of the contract.

Mineral Production of the United States in 1930

THE estimated total value of mineral products in the United States in 1930 was approximately $4,795,000,000, as announced by Scott Turner, Director of the United States Bureau of Mines, Department of Commerce. This is a drop of about 18 per cent from the total value of mineral products in 1929.

Declines in values, accounted for both by lower unit prices and by the falling off in output of nearly all mineral products, are principally explained by the depression prevailing during the year in most lines of industrial activity. The total value of metallic products in 1930 decreased about 33 per cent, as compared with 1929. Notable decreases in total values, ranging from approximately 25 to 50 per cent, were recorded for copper, iron, silver, lead, and zinc, but the value of gold production increased slightly. The total value of non-metallic mineral products in 1930 decreased about 15 per cent from the preceding year. Of the mineral fuels, the total value of natural gas increased, while the total values of bituminous coal, natural gasoline, and petroleum recorded sharp declines.

The following figures give the estimated total value of metallic mineral products and non-metallic mineral products other than fuels and of mineral fuels produced in the United States in 1930:

Estimated Value of Mineral Products of the United States, 1930

Metallic	$ 985,000,000
Non-metallic (other than fuels)	1,028,000,000
Mineral fuels	2,782,000,000
Total	$4,795,000,000

Teach Pan-Americans U. S. Highway Building Methods

THE ROAD BUILDERS from each of fifteen Pan-American countries will be appointed in 1931 for six months' study and travel, under the supervision of the American Road Builders' Association, of American highway methods and equipment. These men are selected by the road department or commission of their native country to meet the following rquirements: studies completed in an adequate school, under thirty years old, knowledge of English, good health, diligent, good character, and a serious intention to make road building their profession.

The successful operation of the training plan last year lead to its expansion to include more students from a larger number of countries. A number of students are now in training and those who have completed the courses have returned to their native countries to assume responsible positions in highway departments, according to association officers.

After a course of study in the Association offices, the men visit state highway departments, equipment and material manufacturing plants, and various federal, state, county and city road and street construction projects. The technical highway director of each country designates the class of work on which the student engineers specialize and complete reports are made by the students.

Bids Opened on Proposed Golden Gate Bridge

ON June 17th bids were opened for the construction of the longest bridge in the world—the suspension-type Golden Gate Bridge—a highway structure to span the entrance to San Francisco Bay.

Bids call for the construction of a suspension bridge with a main span of 4,200 feet. Two equal suspended side spans will each be 1,125 feet in length and with the steel viaduct approaches connecting the bridge with high ground at each end, the total length will be approximately one and three-quarters miles. The suspension towers will each rise 746 feet above the mean low water level. The width of the bridge is to be 90 feet, providing a 60-foot roadway and two eleven-foot sidewalks. Completion in four years is planned.

A $35,000,000 bond issue was approved in November, 1930, to cover the construction by the voters of the six counties in the Golden Gate Bridge and Highway District —a benefit organization formed under an act of the California legislature in 1923.

The low bidders were:

McClintic Marshall Company, 250 Bryant Street, San Francisco, bid $10,494,000 on contract number 1A for steel superstructure.

American Cable Company bid $6,255,767 on contract 1-B for cables, suspenders, and so forth.

Pacific Bridge Company bid $226,000 on contract number 2 for main piers.

Barnett and Hilp bid $1,645,845 on contract 3 for anchorages, cable housing, stairways, filling and grading.

Columbia Steel Company bid $996,000 on contract 4 for San Francisco and Marin approach spans.

Barrett and Hilp bid $966,180 on contract number 5 for concrete paving Presidio approach road, or $988,445 for asphalt paving.

Granfield Farrar and Carlin bid $67,586 on contract six for Sausalito approach road.

Barrett and Hilp bid $345,000 on contract seven for paving of main and approach spans.

Progressive Signal and Lighting Company bid $133,945 on contract 8 for electrical work.

Barrett and Hilp bid $71,430 on contract 9 for toolhouse service and service buildings.

On contract 10 to furnish Portland Cement five different cement companies all submitted same price of two dollars forty-four cents a barrel.

All bids were taken under advisement.

She was only an opticians' daughter—two glasses and she made a spectacle of herself.

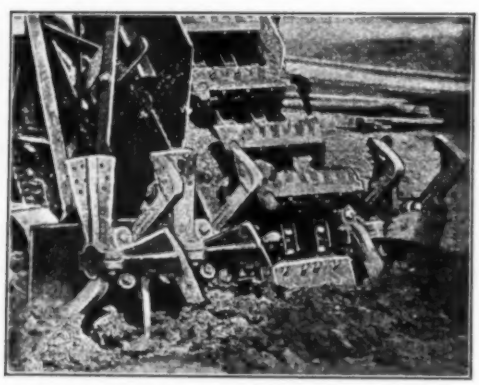
Shallow Grading

at a cost of 5¢ per yard

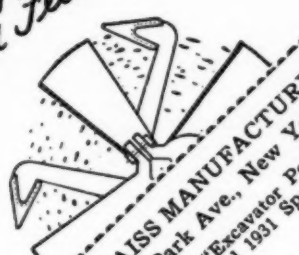
THAT was up in Saskatoon where the Haiss Excavator was bought to grade out the traffic compacted clay roadbed preparatory to paving the streets. Sticky! Wet! Yet the Excavator kept the work moving—with capacity beyond that of the fleet of dump wagons used for haulage. . . . The new model machines, for such conditions, would be equipped with the Haiss (patented) Bucket Cleanout which takes away the curse of stickiness in excavating clay and gumbo. . . . This is a year to take advantage of the Haiss Excavator for shallow grading. It's a money maker!

Clip the coupon—and see the work it has done.

for 46340 cu.yds.



Pick Digging and Propeller Feeding



GEORGE HAISS MANUFACTURING CO., INC.
144th St. and Park Ave., New York, N. Y.
Send me your "Excavator Performance" Book No. 530 and 1931 Specifications

Name.....

Address.....

HAISS EXCAVATOR

Also PORTABLE LOADERS —— PORTABLE BELT CONVEYORS —— CLAMSHELL BUCKETS

For your convenience in writing to George Haiss Manufacturing Co., Inc., you will find a card bound in this issue.

Shots From the Firing Line — *Continued*

1932 Road Show to Detroit

THE 29th Annual Convention and Road Show of the American Road Builders' Association will be held in Detroit, January 9 to 15, 1932, according to a recent announcement. Detroit was chosen only after careful consideration of advantages offered by several other large cities which made strong efforts to obtain the convention.

The ground floor of the Detroit airport building will be used for the Road Show and the huge doors make possible the setting of the largest equipment without difficulty. All convention meetings will be held on the second floor of the airport building where quiet convention rooms are available.

An effort will be made to house all Road Builders whose interests are alike in the same hotel while in Detroit, city people in one hotel, county in another, Pan-American in another, etc. Headquarters hotels will be the Statler and Book-Cadillac.

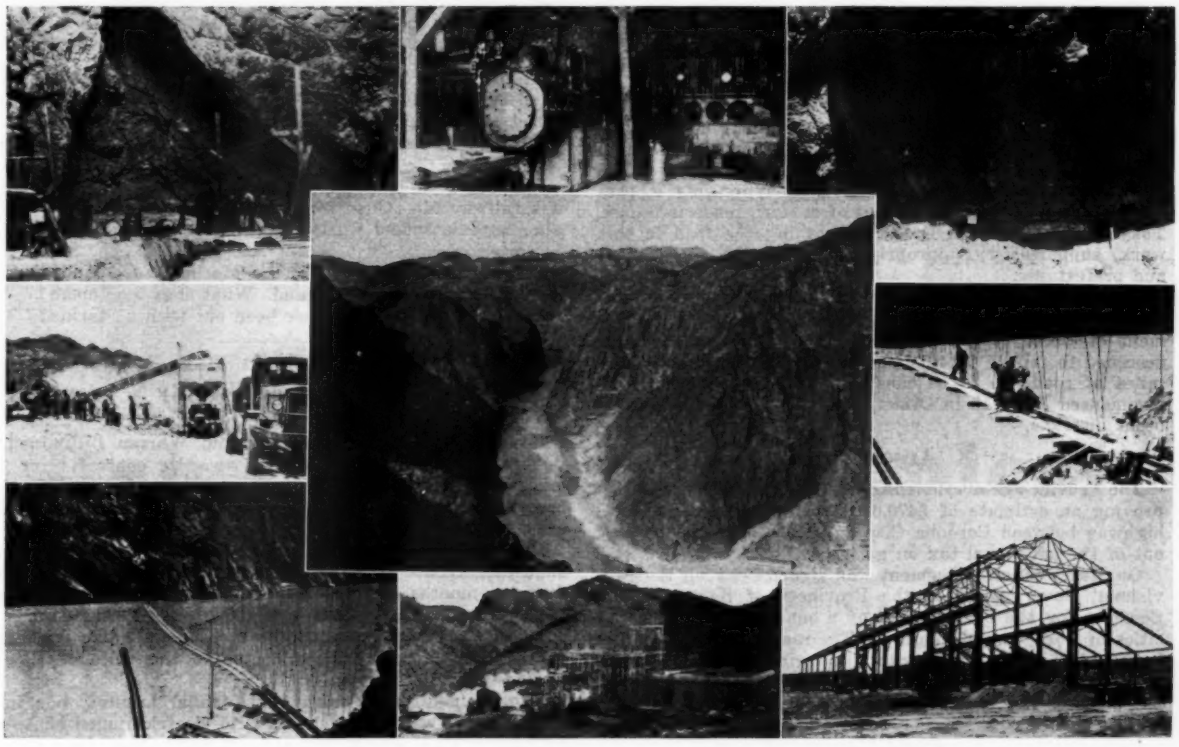
Plans call for the showing of all classes and types of equipment and materials used in the construction, maintenance and operation of streets and highways. The association predicts a larger convention and Road Show than has ever before been held.

New Gravel Consolidation

THE Pyott Sand & Gravel Company; A. Y. Reed Sand & Gravel Company; Beloit Sand & Gravel Company; Tiffany Sand & Gravel Company; South Elgin Sand & Gravel Company; Northern Illinois Supply Company; Tractor City Sand & Gravel Company; Waukesha Lime & Stone Company; Security Sand & Gravel Company; and the Producers Sand & Gravel Company, have formed a consolidation known as the Union Sand & Gravel Company, with offices at 228 North LaSalle Street, Chicago. Mr. J. E. Lindquist is Chairman of the Board and Mr. Chas. Jacobs is President of the new company.

This company has also completed an affiliation with the Indiana Sand & Gravel producers, and will sell Indiana products in the Chicago territory.

HOOVER DAM PROGRESS IN PICTURES



Center: From the rim of the canyon on the Arizona side, the building which shelters the compressors that will supply the air for driving the diversion tunnels can be seen as a tiny speck in the very center. The buildings in the lower right hand corner are the sleeping quarters and mess hall for the canyon crew.

Upper left: Drill sharpening shop in a canyon cave carved by nature.

Center above: One of the compressor units which will supply air for driving the diversion tunnels. This unit is located about one-half mile above the dam site and consists of a 200 h.p. Atlas Diesel engine and Ingersoll-Rand compressor which will deliver 1140 cubic feet of air per minute.

Upper right: From the Nevada side of the canyon one can look down on the start of the giant diversion tunnels.

Left center: Surfacing materials for the road from Boulder City to the dam site are prepared by a well organized crew and modern machinery.

Right center: A 6-inch air line is being laid across the suspension bridge about a quarter of a mile above the entrance of the diversion tunnels. This line will carry air for the machinery used in boring diversion tunnels on the opposite side from the main compressor units.

Lower left: Three suspension bridges now sway above the Colorado giving access to the Arizona side. This illustration shows one of the suspension bridges about half completed.

Center below: The Sierra Nevada sub-station is located directly back of the dam site on the canyon rim and is shown here practically completed. It was put in operation in June.

Lower right: Six Companies, Inc., are to spend $600,000 for the construction of buildings in Boulder City. A main office building, dormitory, mess house and machine shop are among the principle buildings now under construction. Here we see the frame work for the machine shop being erected with the assistance of six Companies' Bucyrus-Erie Gas + Air crane.

Shots From the Firing Line — *Continued*

Prequalifications of Bidders Required by Oregon Law

ON JUNE 6th, the act of the Oregon legislature requiring the prequalification of all bidders for public contracts, estimated to cost more than $10,000, became a law. From and after that date, the State Highway Commission will issue no proposal blanks to prospective bidders who have not in advance submitted certain prescribed statements relative to their financial condition, equipment and construction experience, and have been adjudged qualified to bid on, and to perform in a satisfactory manner the work concerned.

Foreign

Great Britain

More than 296 miles of all-concrete roads were built in Great Britain during 1930, which constitutes a record for any one year. This increase in construction of all-concrete road is accounted for not only by county and municipal work, but also by private street work and estate development.

The Glamorgan County Council has adopted a five-year highway program calling for an expenditure of about $11,400,000. Of this amount approximately $8,325,000 will be received in grants, the balance to be raised by loans.

Japan

A new highway extending from near Abeno in Osaka to Mukachi-machi was opened on April 18, 1931. This highway cost approximately $1,500,000. It represents a progressive step in the development of modern roads in Japan. Tokyo, Yokohama and Osaka are taking the lead in this work, supported by appropriations from the government and prefectures.

The Japanese Home Office recently announced an appropriation of $8,300,000 for the construction and improvement of roads in practically all the prefectures. This is designed to relieve the unemployment situation. About 140 miles of road are to be constructed and improved. Work commenced April 15 in Osaka, Nagoya and Yokohama and other districts.

Argentina

The Provincial Government on April 7 issued a decree approving an estimate of $470,000 for the construction of a highway between Cordoba City and Rio Cuarto, to be paid out of the additional tax on gasoline.

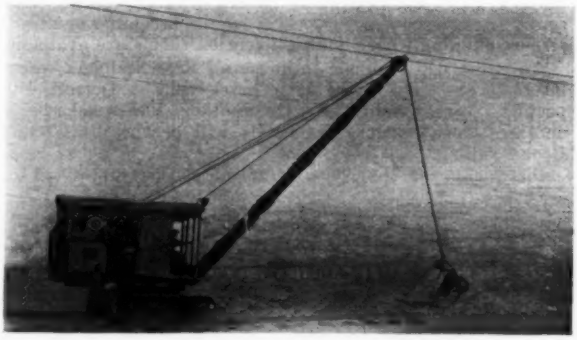
On March 30 an agreement was signed between the Provisional Governments of the Provinces of Santa Fe and Cordoba for the construction of a main road to join the cities of Cordoba and Santa Fe. The road is to be 185 miles long and 65.6 feet wide, with a margin on either side for future paving. $77,500 will be appropriated for initiating the project. The road is to be completed during 1931.

Chile Notes

By W. PORTH

The above illustration shows one of the Bucyrus-Erie D-2s at the Potrerillos Plant of the **Andes Copper Company**. The machine is building an embankment to hold the tailings from the refinery.

The machine excavates tailings already deposited and raises the embankment by one or two metres as it goes along so as to increase the capacity of the tailings reservoir. The dragline travels along the top of the embankment. This company has another Bucyrus-Erie D-2 electric doing the same work on another tailings disposal reservoir and a third machine, a Bucyrus-Erie D-2 Diesel, is now operating near the Port of Chanaral excavating a small drainage canal to protect the railway between Potrerillos and the sea.



At the **Maria Elena mine** of the **Anglo Chilean Consolidated Nitrate Corporation** the above Bucyrus-Erie 20-B Diesel was recently put into operation after the first overhauling in five years of steady operation. Complete job was done on the machine including a fresh coat of paint and the 20-B stepped off like a youngster on the building of a railway fill. "Good for another five years," is the way Mine Superintendent Chris. Zingg enthusiastically put it.

Mabel: "It says here that the Marines have landed and have the situation well in hand. What does that mean?"

Grace: "Gee, ain't you ever been out with a Marine?"

Canada

Montreal and Vicinity

By R. J. STAPLES

Bayner Construction Company and **Warren Bituminous Paving Company** have just been awarded contracts for 7 miles each of concrete highway construction between Bowmanville and Blackstock, Ontario. Both these companies are users of Bucyrus-Erie equipment.

Building permits in Montreal for the month of May, 1931, show an increase over the preceding month, as did also the first five months of 1931 over the same period in 1930. The total increase of 1931 over 1930 to date is $2,994,901.80.

D. B. Carswell, managing-director of Canadian Vickers Limited, has recently been elected to the office of Vice-President of the Company.

The Foundation Company of Canada, Limited, has installed two Type 1030 Bucyrus-Erie electric tunnel shovels on their J. C. McLaren contract at Buckingham, Quebec.

D. Verochio of Montreal, is keeping his Type GA-3 Bucyrus-Erie shovel busy on various jobs about town. Bruce Brotherson is at the levers of this outfit.

Toronto and Vicinity

By R. J. STAPLES

Marien-Wilson Limited are using a Bucyrus-Erie B-2 shovel at the corner of St. Catherine and Crescent Streets for the construction of a store and office building, general contract for which is held by Messrs. Duranceau and Duranceau Limited.

And as we duck out the door while the boss isn't looking, we are reminded of the blonde waitress who said: "I have stewed kidneys, boiled tongue, fried liver and pig's feet."

"Don't tell me your troubles, sister," complained the hard boiled egg, "give me a chicken pie."

Preliminary Work on the Hoover Dam

In the Black Canyon of the Colorado River where the great Hoover Dam will be built. The shovel, which is used by the Six Companies, Inc. for making a road grade, was furnished equipped with "HERCULES" (Red-Strand) Wire Rope.

Dependable—Economical

Because "HERCULES" (Red-Strand) Wire Rope is uniformly dependable and economical, it is a universal favorite with all whose work requires the use of heavy duty material-handling equipment. While it is a "big job" rope, it provides the same ratio of economy on the smaller jobs, as has been fully demonstrated by its service record.

"HERCULES" (Red-Strand) Wire Rope is long-lasting because all of the materials that go into it —wire, core, and lubricant—are of the very highest quality; moreover, our methods of manufacture are such as to insure even tension on both the wires and the strands, which means that every wire and every strand does its full and equal part.

HERCULES RED STRAND WIRE ROPE

Made Only by **A. LESCHEN & SONS ROPE CO.** Established 1857

5909 Kennerly Avenue

ST. LOUIS

New York **Chicago** **Denver** **San Francisco**

For your convenience in writing to A. Leschen & Sons Rope Co., you will find a card bound in this issue.

Shots From the Firing Line — *Continued*

British Columbia Notes

By K. HARPER

Announcement of an important improvement program for interior British Columbia Highways was made by R. W. Bruhn, Minister of Public Works on his return from a tour of the mainland. The projects planned include the following:

Construction of a new avenue of American travel into this Province with a road from Creston to Port Hill, on the boundary, and improvement of the existing entrance at Kingsgate with reconstruction of the road northward.

General improvements and widening on the entire transprovincial highway from Creston eastward to the Alberta boundary through the Crows Nest Pass to make this road conform to the standards of the new Alberta highway, which it meets in the pass. This will include important diversions at Elko and Irishman's Creek.

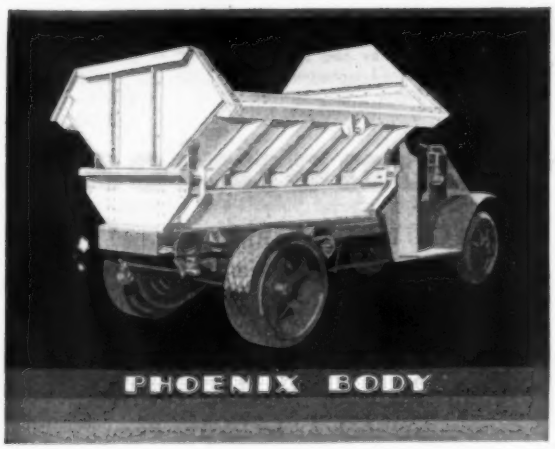
Completion of the Cranbrook-Kimberley road with gravel surfacing and improvements to the existing roads in Kimberley itself.

Widening of the Scenic highway from Golden to Yoho, which is so narrow in places as to be dangerous.

Improvements and widening on the main highway in the Windermere Valley, between Cranbrook and Golden.

Contractors in this district at present have a number of power shovels idle partly due to the Government and Municipalities having their work done this year by hand labor in order to help out as much as possible in relieving the unemployment situation.

The proposed Pacific-Yukon-Alaska International Highway running from Seattle, Washington, through British Columbia and the Yukon territory to Alaska is now under survey by both governments. The road is partially constructed in some sections along the route, but to complete it through the mountainous regions of Canada and Alaska will be a large engineering undertaking.



•strength in abundance, in excess of its ultimate requirements, fits the Phoenix Body for shovel and quarry abuse . . . its rigidity remains pronounced over years of constant use.

•symmetry that expresses harmonious relationship to the truck proper . . . that lends appeal from the visual as well as the practical point of view.

•stamina in the Phoenix Body is most evident in the details of its design . . . its Herculean structure assures lasting endurance.

EASTON CAR & CONSTRUCTION COMPANY, EASTON, PA.

For your convenience in writing to Easton Car & Construction Co., you will find a card bound in this issue.

New England Notes

By C. BRUCE McCOWN

Bradford Weston was recently awarded a highway contract in Hingham, Mass.

Widening of the Merrimac River Boulevard from Haverhill to the sea has been awarded to P. J. Holland. This is an eight and one-half mile concrete pavement job which Mr. Holland expects to complete by September.

The excavating contractors in Boston and vicinity are all busy at present. Prices are still very low, however.

The Lawton Construction Company of Providence, R. I. were recently awarded a highway job in Erving, Mass., which will practically complete the construction of Route 2 from Boston to the west.

Operator K. E. Corbin who is running an old Bucyrus-Erie Type B owned by C. Bianchi & Co. of Framingham, Mass. on the Boston and Worcester turnpike tells us that one day recently he loaded out 1300 cubic yards of gravel using a ¾ yard dipper. As the gravel was free flowing so that it did not permit heaping up the dipper as one can in loam Mr. Corbin's record is one of which he may be justly proud. He also tells us that for several consecutive days he loaded an average of over 1000 cubic yards per day. All of these figures are engineers yardage after rolling in place. Commenting on his records Mr. Corbin says, "I found the power trip on the dipper of considerable assistance in making fast time. You can imagine how the old B was whirling those days."

Philadelphia Notes

By M. G. CONWAY

Tommy Rising is operating the GA-2 shown above for the Joseph Herzog Company of Philadelphia. He took out 23,000 cubic yards in 22 working days for the Bell Telephone Company at Broad and Passyunk Avenue in Philadelphia. Irwin & Lighton were the general contractors. All the banks were finished by the shovel without hand work.

The Golder Construction Company of Philadelphia under the supervision of Charles Raudercus are making remarkable progress on the Locust Street Subway. They have had their two Bucyrus-Erie 1030 electric tunnel shovels under the deck since April 15th.

Jafolla & Mark of Philadelphia have been awarded the contract for fifteen blocks of South Broad Street subway in Philadelphia. They have just recently finished the elevation of the Reading Railroad through Manayunk. Bill Mark is certainly pushing this subway job. They have two 502 Koehring cranes driving "H" columns and are getting ready to drift their four "1030" electric Bucyrus-Erie tunnel shovels under the deck.

As it is in most cases

There is a club in New York devoted to the laziest men in the world. Any attempt by a member to hurry is punishable by a fine.

One day a member was seen driving his car past the club at a high rate of speed.

Summoned before the committee, he excused himself by saying that he was too lazy to take his foot from the accelerator.

Up goes the load

.... down go the costs!

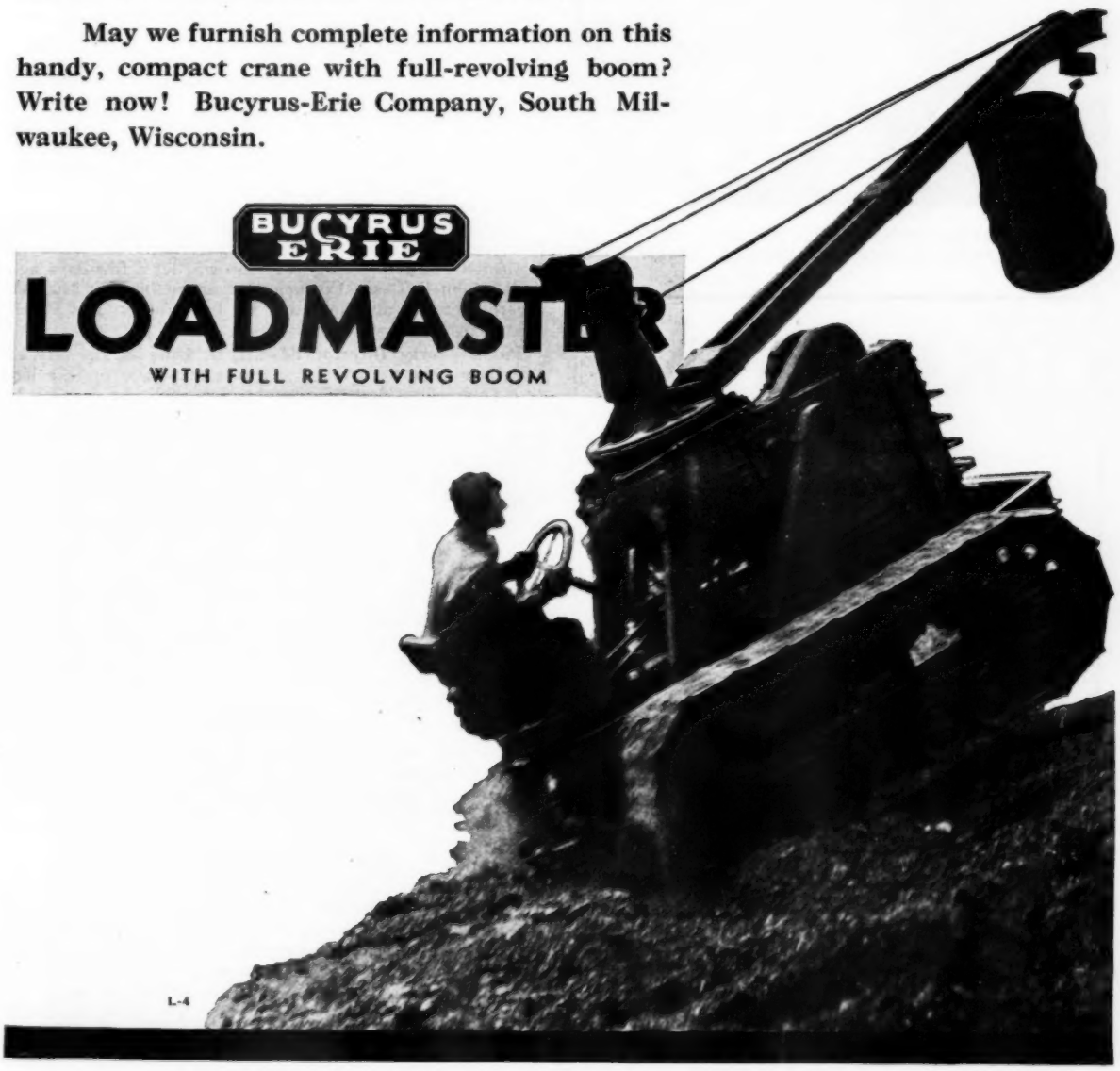
To speed up your moving of loads... to cut your material handling costs, the Loadmaster is at your service. It keeps your hauling equipment traveling on a profit-making schedule; cuts yard and warehouse charges, speeds up placing of steel, timber and machinery; works in tight quarters; saves back-breaking labor, time and money.

May we furnish complete information on this handy, compact crane with full-revolving boom? Write now! Bucyrus-Erie Company, South Milwaukee, Wisconsin.

BUCYRUS ERIE

LOADMASTER

WITH FULL REVOLVING BOOM



L-4

For your convenience in writing to Bucyrus-Erie Company, you will find a card bound in this issue.

Shots From the Firing Line — *Continued*

Anthracite Notes

By T. H. BARRETT

An innovation in coal recovery from caved territory is being tried near Hazleton where **Roy Risser** of Lebanon is using a clamshell to recover the pillar coal left after robbing a steeply pitching vein. While the tonnage is not as large as with a shovel or dragline the machine is in a safer position.

Mooney and Zaccino of Hazleton are stripping on the old Sandy Run property.

Krosby and Shellhamen of Tamaqua have started stripping on the Cauley Mountain near Rock Glen, Pa.

The interesting picture of the graveyard shift at the **Calcite Quarry Corporation** operations at Lebanon shows their Marion shovel loading a 3-way LaPlant-Choate wagon hauled by a Caterpillar 60 while one of the drill crew block-holes the oversize in the foreground. Three 60's with LaPlant-Choate wagons are used for hauling and handle approximately 600 yards per shift on a haul of 3000 feet.

YOU'LL FIND

BECO-BLOCKS

AND

BECO-LINING

the most serviceable friction materials for use on excavating machines. Why not take advantage now of the savings in replacements and smoother operation they make possible. Write for full information

BUCYRUS-ERIE COMPANY
Specialty Department
South Milwaukee, Wisconsin

BUCYRUS ERIE

Pittsburgh and Vicinity

By J. S. WEAVER

The Virginian Railroad awarded a contract for the building of 6.38 miles of track, three tunnels and two bridges on their Guyandotte branch between Elmore and Gilbert, West Virginia, to **Nelson and Chase and Gilbert**, 57 Williams Street, New York City. The contract is for $1,000,000 and calls for completion in twelve months.

Appointment of district engineers of the Department of Highways, for Western Pennsylvania, recommended by Secretary Sam Lewis, has been approved by Governor Gifford Pinchot. The district engineers will work under the direction of the division engineers. The appointees of this district follow: Stanton C. Funk, District No. 1 Erie, Crawford, Mercer, Vanango, Warren and Forest Counties; William J. Carroll, District No. 2—Clearfield, Centre, Clinton, Cameron, Elk, McKean, and Potter Counties; E. J. Finn, District No. 10—Indiana, Armstrong, Butler, Clarion, and Jefferson Counties; H. E. Kloss District No. 11—Allegheney, Westmoreland, Beaver, and Lawrence Counties; and C. A. Eichelberger, District No. 12—Fayette, Somerset, Washington, and Green Counties.

By the time this goes to press the **State Construction Company**, New Kensington, Pennsylvania will have their street grading and paving job in Brackenridge Borough well under way.

The R. V. Baldwin Company, Coraopolis, have been awarded the contract for grading and paving, Seventh, Tenth and Eleventh Avenues, in New Brighton.

Contract for the elimination of a Pennsylvania Railroad crossing at Crafton, the biggest undertaking of its type projected this year by the railroad, was let a few days ago to the **John F. Casey Company** for approximately $400,000 according to an announcement by J. F. Deasy, Vice-President for the Pennsylvania Railroad.

Public Works Director Edward G. Lang of the city of Pittsburgh has prepared a schedule that calls for the letting before July first of contracts for public improvements totaling about $900,000.

M. W. Fesa, Donora, has completed his contract on the Coraopolis Play Grounds, this work was completed in record time. Mr. Fresa was associated with that well known Washington, Pennsylvania contractor **DeLloyd Thompson**, on this work and between them they sure made the dirt fly.

Baltimore and Vicinity

By FORD FISHER

Cumberland Contracting Company were low bidders on the $235,000 Alleghany County, Maryland State Highway Commission contract number 87. The job includes 20,000 cubic yards excavation and 70,000 yards concrete.

Vang Construction Company of Cumberland was awarded an $800,000 dam job at Cumberland.

Potts and Callahan have contract for wrecking buildings and excavating for erection of the $2,000,000 Enoch Pratt free library building here. Bucyrus-Eries, from their fleet of six machines, will handle the excavating.

Buffalo Notes

By D. E. WHITE

Reno Green, the popular GA-2 operator for the Albany Gravel Company, Albany, N. Y., wishes to announce that he has acquired a new oiler. This recent addition became a well-known fact about three months ago, in the shape of a son. As yet we have not been able to get his name, but imagine that if the grease-cups are not filled he will be called a lot of things. Incidentally, he might call him GA-1. Understand that mother and son are doing nicely.

For your convenience in writing to Bucyrus-Erie Company, Specialty Dept., you will find a card bound in this issue.

CLETRAC
CRAWLER TRACTORS

– for EVERY TYPE of Industrial Service!

HERE are shown two Cletracs—the smallest and the largest units in the line—working on the same job for a County Highway Department.

Wherever there is earth to be moved, whether with a one-man Fresno or the heaviest of graders to carve out highways where roads have never before existed, Cletrac power and Cletrac traction can be depended upon to finish the job in shortest time at lowest cost.

Write today for special folders giving the facts about Cletrac 15 (shown above), Cletrac 80-60 (shown below), or the equally efficient "in-between" sizes Cletrac 20, Cletrac 40-30 and the Cletrac 40.

THE CLEVELAND TRACTOR COMPANY
19327 Euclid Avenue Cleveland, Ohio

For your convenience in writing to The Cleveland Tractor Company, you will find a card bound in this issue.

Shots From the Firing Line — *Continued*

Great Lakes Dredge & Dock Company has started work on the Port of Oswego at Oswego, N. Y. Two of their Bucyrus-Erie clamshell derrick boats are on this job. Our old friend H. Juast of Cleveland, O., is operating No. 57 and still swears by it.

D. B. Trowbridge of Ticonderoga, has reorganized and is now operating under the name of the **Diesel Construction Company,** due to the fact all of his road building equipment is Diesel powered.

Ingersoll & Barhite, Medina, N. Y., were recently awarded a contract totaling $153,104.00 in Letchworth State Park, Wyoming County. In this contract there will be the construction of two re-inforced, concrete stone-faced arched bridges; one span of 110 ft. and another of 55 ft. They have moved in their Keystone shovel; also their 1030 Bucyrus-Erie machine.

Frank A. Lewis & Son, Bainbridge, recently landed a contract in Chenango County amounting to $53,164.25 They have moved their Bucyrus-Erie Type "A" and General machines in on this job. Mr. Lewis recently underwent a very painful operation, but is now back on the job.

Harry Patterson, Buffalo, was awarded a contract for the Post-Campbell road amount to $254,886.60.

Virginia Notes

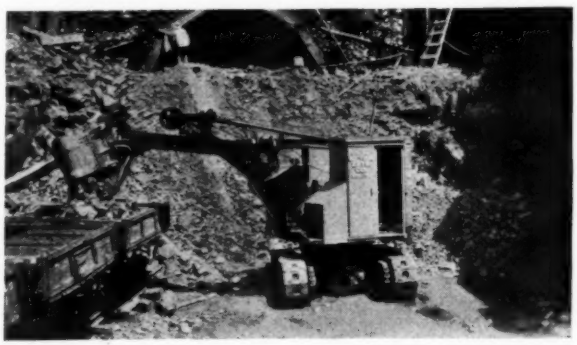
By M. L. HATCH

Laramore Paving & Contracting Company of Danville, recently secured an excavating contract in the city of Danville. They are handling this with their old Type B Bucyrus-Erie. Mr. Laramore comments enthusiastically on the old machine saying that "she can still handle a rough job almost as economically and efficiently as in her younger days."

The Walton Construction Company, Inc., of Roanoke, has been making wonderful progress with their tunnel for C. & O. Railway at Alleghany, Virginia. In the west portal, where they are using their Bucyrus-Erie Type 1030 2-motor electric tunnel shovel, they have made an average of 100 feet of standard single track railroad tunnel per week. They are

also making excellent progress in the east portal where they are excavating with a Bucyrus-Erie Type B air machine. The approach cut work is done by **Waugh Brothers** of Fayetteville, West Virginia, who employed a Bucyrus-Erie 50-B steam shovel, an Osgood and several railroad type shovels. This approach was particularly heavy and mostly in solid work with maximum cut to a depth of 200 feet. The above illustration shows the 50-B cutting into some of the heavy digging on this approach.

Haley, Chisholm & Morris of Charlottesville, are making excellent progress on their large tunnel project known as the "Big Bend" tunnel on the C. & O. Railway, in spite of



handicaps. They have been troubled with excessive dust in the tunnel and large boulders in the roof have necessitated precaution against falling, both interfering with the best progress. The project involves a 6,200 foot standard single-track railroad tunnel with an extremely heavy approach at the west end. We understand that they have been able to maintain their schedules to date and under the circumstances this could only be accomplished by good equipment

ASSISTANT — Available, a Hayward Bucket that will prove itself a capable assistant to any concern engaged in excavating work. For particulars address The Hayward Co., 52-54 Church St., New York, N. Y.
Hayward Buckets

HUG

Reduce your subgrade and roadbuilding costs with HUG Subgrading Machines, HUG Turntables, HUG Subgrade Templates and HUG Roadbuilder Trucks— all *built to meet a condition.*

The HUG COMPANY Highland Ill.

FIRST ORDER FOR HOOVER DAM EQUIPMENT GOES TO ATLAS DIESEL

SIX COMPANIES, INC.

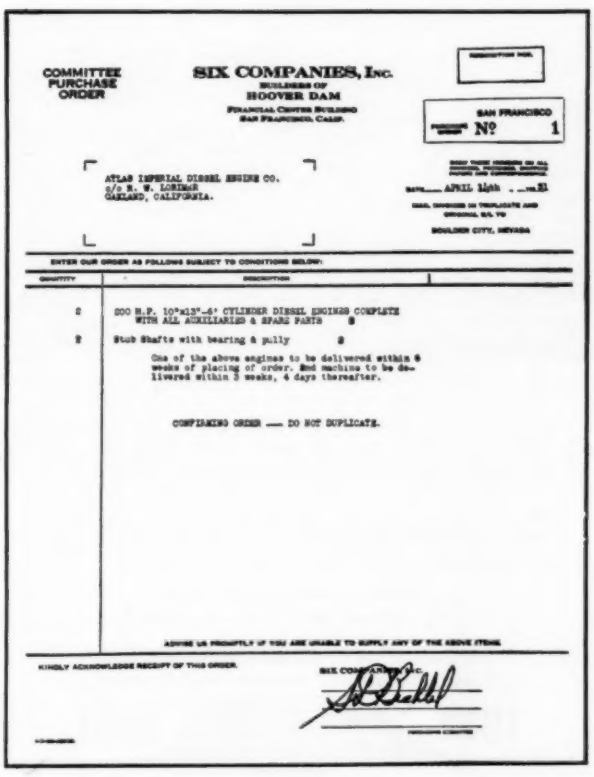
—builders of Hoover Dam, have issued purchase order No. 1, for the first major equipment, for use on Hoover Dam construction. This order was for Atlas Diesels, for use in driving air compressors.

Also!—Atlas Diesels are now being used on the first sub-contract. *Excavators* powered with Atlas Diesels, in addition to Atlas *portable units*, are now in use on the preliminary road work, under contract to J. L. LeTourneau, nationally famous user of modern equipment.

Extensively used on the largest construction projects throughout the world,—users know that no other type of power can match Atlas Diesel's low power costs. Sturdily built, to stand the gaff, Atlas Diesels have proven their dependability.

Now . . . new features, and new manufacturing processes are resulting in even greater performance for users. Don't fail to investigate the Atlas Diesel . . . for portable power, and as power for the diesel excavators of Bucyrus-Erie, P & H (Harnischfeger), Link-Belt, and Thew Lorain. More excavators are powered with Atlas Diesels than with all other diesels combined.

Write for complete facts. Atlas Imperial Diesel Engine Co., Oakland, California. Branches and distributors serve the entire world.



COMMITTEE PURCHASE ORDER

SIX COMPANIES, Inc.
BUILDERS OF
HOOVER DAM
FINANCIAL CENTER BUILDING
SAN FRANCISCO, CALIF.

SAN FRANCISCO
PURCHASE ORDER No. 1

ATLAS IMPERIAL DIESEL ENGINE CO.
c/o R. W. LORING
OAKLAND, CALIFORNIA.

DATE APRIL 14th 1931

SEND INVOICE IN TRIPLICATE AND ORIGINAL BILL TO
BOULDER CITY, NEVADA

ENTER OUR ORDER AS FOLLOWS SUBJECT TO CONDITIONS BELOW:

QUANTITY	DESCRIPTION	
2	300 H.P. 10"x13"-6 CYLINDER DIESEL ENGINES COMPLETE WITH ALL AUXILIARIES & SPARE PARTS	$
2	Stub Shafts with bearing & pully	$
	One of the above engines to be delivered within 6 weeks of placing of order. 2nd machine to be delivered within 3 weeks, 4 days thereafter.	
	CONFIRMING ORDER — DO NOT DUPLICATE.	

ADVISE US PROMPTLY IF YOU ARE UNABLE TO SUPPLY ANY OF THE ABOVE ITEMS.

KINDLY ACKNOWLEDGE RECEIPT OF THIS ORDER.

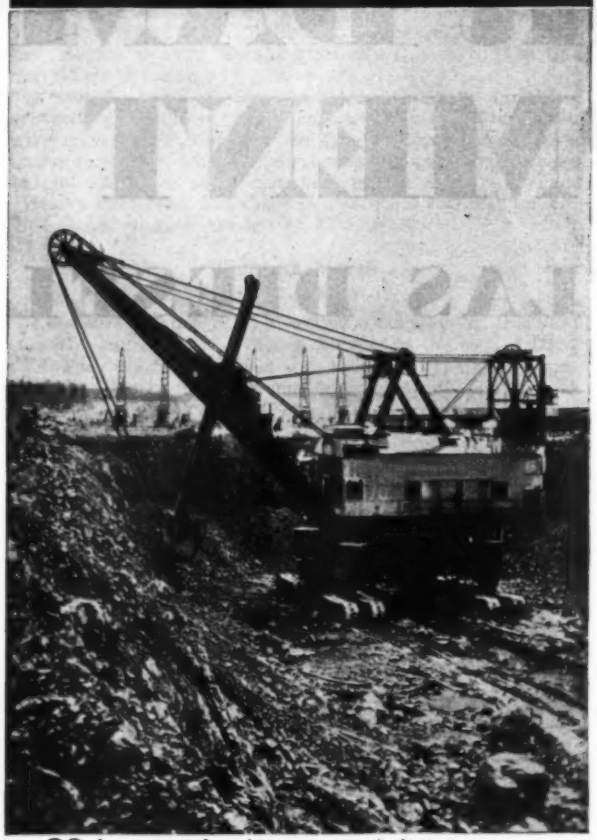
SIX COMPANIES, INC.

PURCHASING AGENT

ATLAS IMPERIAL *full* DIESELS

For your convenience in writing to Atlas Imperial Diesel Engine Co., you will find a card bound in this issue.

AMERICAN
STEEL & WIRE COMPANY
WIRE ROPE



SO important is wire rope to industry—on excavating machines—on hoists—on elevators—and for a thousand and one purposes—that its users can afford only to specify a brand of proved dependability, economy and long life. Because of its outstanding records—and the known reliability of its maker—American Steel & Wire Company American Wire Rope will be found on most equipment where service requirements are severe.

Made by the Largest Wire Rope Manufacturer in the World

The illustration shows American Wire Rope in use on the world's largest electric shovel.

1831 COMMEMORATING 100 YEARS of PROGRESS in WIRE MAKING 1931

AMERICAN STEEL & WIRE COMPANY
SUBSIDIARY OF UNITED STATES STEEL CORPORATION
208 South La Salle Street, Chicago And All Principal Cities
Pacific Coast Distributors: Columbia Steel Company, Russ Building, San Francisco
Export Distributors: United States Steel Products Company, New York

Shots From the Firing Line — *Continued*

and excellent management. The work is being carried on under the direct supervision of the members of the firm who are all experienced men in the contracting field. Equipment includes all types of tunnel machinery with large compressor plants, Bucyrus-Erie, Marion and Lorain shovels. The Bucyrus-Erie 1030 electric tunnel shovel is shown above digging in.

Hall & Mitchell of Keswick, have recently been handling excavation on a State highway project between Gordonsville and Orange. The work involved quite a large percentage of stiff red clay and notwithstanding the many interruptions they had to suffer in following the old road alignment to a large extent, Mr. Hall reports that they made good progress with their B-2 Bucyrus-Erie steamer. They also have a Type B Bucyrus-Erie, an old timer still in serviceable condition, which they keep around Charlottesville for foundation and other excavating jobs. Their Lorain 75 is working on a project in the neighborhood of Lexington, on which they are making good progress.

North Carolina Notes

By F. DUVAL CRAVEN

Jamison Brothers, Incorporated, contractors of Nashville, Tenn., and Greensboro, N. C., are making the dirt really fly on their State job at Elkin. This is one of the heaviest grading jobs ever undertaken by the Highway Commission of the Old North State.

The 1931 North Carolina Legislature made one of the greatest changes on record which might affect the maintenance and construction of highways and county roads which were formerly under county and township control pass into the hands of a revamped State Highway Commission.

Murray Construction Company's equipment will have no idle hours in North Carolina this summer. They have three jobs running at present and two more which they hope to start by the middle of July.

The West Construction Company of N. C., Inc., at Kinston, is making a record laying sand asphalt this summer.

Kirkman Brothers, of Mount Airy, have their shovel on Jamison Brothers' job at Elkin.

Southern Notes

By W. W. WHORLEY

H. K. Lidstone is superintendent at the phosphate mine of the **Charleston Mining Company** near Mount Pleasant, Tennessee. Cummins Hall and Ollie Trice are operating a Bucyrus-Erie Class 24 dragline for this company. Jess Poag and J. W. Linan are operating a Bucyrus-Erie 50-B machine for the same company.

J. R. Fullier is operating a 1035 Bucyrus-Erie clamshell machine for Washington County Highway Commission, Greenville, Mississippi.

For your convenience in writing to American Steel & Wire Co., you will find a card bound in this issue.

Mike Williams who has been operating a Bucyrus-Erie B-2 steam shovel for **Jerry Gwin** in Tennessee on highway work was in Birmingham recently and told us of some records recently made loading gravel. According to Mike the above machine loaded around 1500 yards per day with one day as high as 1800 yards in eleven hours.

Henry Davis, who has been operating a shovel for the Woodstock Operating Corporation near Cedartown, Georgia, reports that business is very quiet in the brown ore mines at that point.

Vader Roberts has been operating a shovel for J. B. Turner on highway work near Centerville, Tennessee and states that they have completed their work.

John Fenton, Jr., is loading rock at the underground quarry of the **Signal Mountain Cement Company** with a Bucyrus-Erie 50-B steam machine. The underground rooms are of such height that the steam machine can be operated successfully, using coke for fuel, without inconvenience to the shovel and train crew. The excellent appearance of the 50-B shovel after a number of years' work loading rock is a tribute to the ability and care which Mr. Fenton has shown.

By R. S. WELFER

Brantley & Crawley of Banks, Alabama, report good progress on their Mississippi highway project. They are using a Bucyrus-Erie Type 1035 gasoline shovel.

H. N. Donahoo of Birmingham, with J. T. & M. L. Gaines, has made some good estimates on their work near Vicksburg.

J. W. Gwin of Birmingham, has work under way in Alabama, Georgia and Texas. He has his Gas + Air shovel in the last named state.

Hooper Construction Company of Bunnell, Florida, was awarded the heavy work on the Augusta, Georgia, levee. **Claussen-Lawrence Construction Company** of Augusta will do the lighter repair work above the city.

The second largest highway letting in the history of South Carolina was held in early June. There were ten concrete paving projects, totaling 148 miles; 9 contracts of bituminous surfacing totaling 160 miles; 15 grading jobs totaling 194 miles; and 13 bridges. The total approximates $6,000,000.00.

Beckham-Lawler Construction Company of Perry, Georgia, report good progress on their work.

W. R. Eve, Augusta, is finishing up two projects in South Carolina.

Alabama let several small projects in late June.

Georgia will receive bids on highway work in July, but the date had not been set at the time this was written.

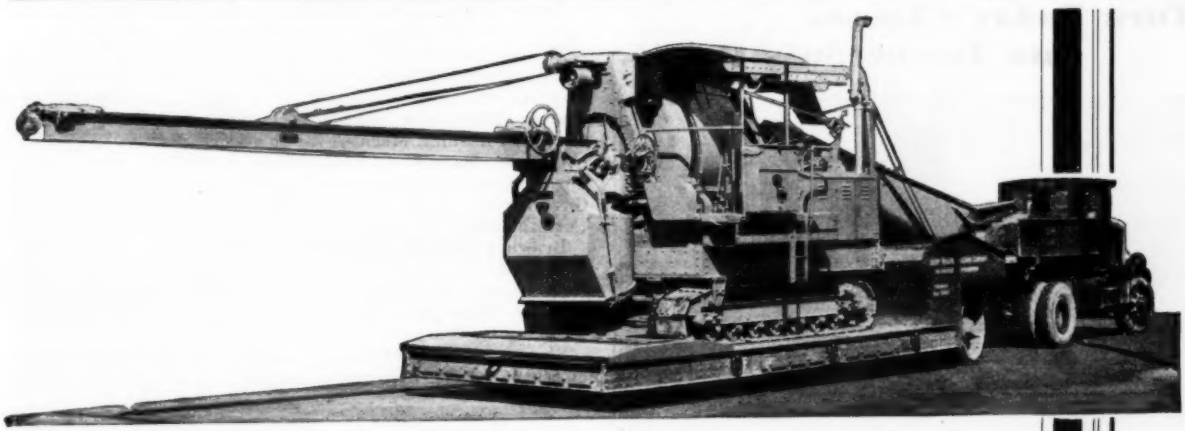
By F. W. WEBSTER

Four years ago, Louisiana had little to offer in the way of hard surfaced roads. At the close of 1927 the State had but sixty miles of highway pavements. In four years Louisiana has evolved a plan that will bring the State a total of about 3,000 miles of hard surfaced roads. The job is about one-third done and the way is clear for finishing it in about twelve months.

Louisiana has let about 1,750 miles of concrete pavement on contract and about half of this has been completed. This year contracts have been awarded for the construction of about 940 miles of concrete pavement and awards are pending for an additional 200 miles. In addition to the contracts awarded for concrete pavement, there has been let and awarded contracts to build 620 miles of Amesite black top pavement and also more than 500 miles of oil surface treatment.

At present more than 100 paving outfits are busy on these contracts. Some of the paving outfits are laying 1,500 feet of pavement daily; the best mark recorded this year was the placement of 2,004 feet. Altogether the contractors now at work can likely turn out, if the weather is good, better than 15 miles of pavement daily.

Louisiana has been able to speed up the paving of her state highway system by issuing $68,000,000.00 road bonds financed by part of the funds accruing from the 5 cent gasoline tax.



Haul *Bigger Pay-Loads* — at a new low cost

YOU'LL get a new idea of efficiency in heavy hauling, when you talk to users of the WILLIAMS "Arch-Girder" Trailer.

They are hauling *heavier pay-loads*—faster — with less gas. Takes less time to load—costs less to keep the trailer in shape.

Get the facts on *the original trailer built for greater capacity without added weight.* Write us.

G. H. WILLIAMS COMPANY
603 Haybarger Lane, Erie, Pa.

Branch Offices: *New York, Pittsburgh, Cleveland, Chicago.*

WILLIAMS
TRAILERS—BUCKETS

355

For your convenience in writing to G. H. Williams Company, you will find a card bound in this issue.

Shots From the Firing Line—*Continued*

River Notes

By W. W. WHORLEY

Wm. T. Newton, Superintendent, Second New Orleans District, U. S. Engineers Office, New Orleans, Louisiana, advises that they completed to the first of June 1,350,000 yards of emergency work near Morganza, Louisiana. This work involved about fifty per cent of rehandle and work orders were received the latter part of March. During the month of May Bucyrus-Erie Class 230 dragline B-6 equipped with 5-yard bucket handled 137,000 yards.

Building levees near Scott, Mississippi the above Bucyrus-Erie 52-B Diesel piles the dirt into Euclid wagons drawn by Caterpillar tractors. The driveway for the hauling equipment is sometimes rather rough but the crawlers on the Euclid are built for that kind of going and, of course, the Caterpillars are not bothered by a little rough going. Fuel economy of the Atlas Diesel power plant on the 52-B is a considerable factor in the profitable operation of this outfit. On this job the 52-B is used to cut down an old levee.

Henry Hughey Company, Inc., have been using their new Bucyrus-Erie 43-B gasoline dragline on a job of grading the river bank at Memphis, Tennessee, as shown above. This work, North of the bridges of Memphis, involves cutting down the slope of a high bank which has caused considerable trouble by sliding. The dragline is operated by Wallace Harness.

Eastern Tennessee Notes

By R. F. McLAUGHLIN

Stacy Brothers, Lancaster, S. C., have completed the second section of the Johnson City-Kingsport State Highway and have moved to the Virginia Line. They expect completion of the job within three weeks.

Breeland & Lyle, Birmingham, have started grading on State Highway in Rhea County, Tennessee.

Booth & Flinn, Inc., Pittsburgh, are excavating for the last pier on the Henley Street City of Knoxville Bridge.

Murray Construction Company, Knoxville, are moving equipment to Douglas, Ga., for starting their State Highway Asphalt job. D. W. Fisher is the Superintendent in charge. They have bought a Lakewood Tandem Screed Asphalt Finishing Machine for this work.

Gornell, Darrow & Kirkpatrick, Russellville, Ky. were low bidders at Chattanooga June 12th, on the United States Government Road between Shiloh National Park and Corinth, Miss.

Brown Contracting Company, Chattanooga, with **Myers & Rambo,** Mountain City, Tenn. sub-contracting, now have four shovels excavating on the Johnson City-Jonesboro, Tennesee State Highway and both firms are making good progress on the job.

Sherman Cox, Contractor, Knoxville, has started erection of the new Kern Bakery Building in South Knoxville, Tennessee.

Turn Today's Losses Into Tomorrow's Profits

Lower yardage costs are now possible with a

CAMEL

TRACTOR DUMP WAGON

A combined Truck, Tractor and Bulldozer.
5 Cubic Yards Capacity.
Crawlers, Steel Wheels and Pneumatic Tires all interchangeable on the same axle.

Send for illustrated folders.

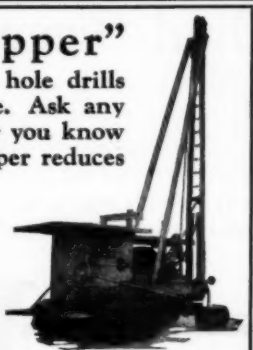
DESIGNED AND BUILT BY

SHUNK MANUFACTURING COMPANY

105 Auto Ave. *Established 1854* Bucyrus, Ohio.

"Loomis Clipper"

"Loomis Clipper" blast hole drills give you cheaper footage. Ask any "Loomis Clipper" owner you know to tell you how the Clipper reduces his drilling costs.



Made in steel or wood frame or all steel and for wire or Manila line.

Write for full information

Established 1842

THE LOOMIS MACHINE CO. K Street Tiffin, Ohio

WIRE ROPE BY WILLIAMSPORT . . .

. . . holds an enviable record for endurance

Your copy of our 1931 Catalog and Data Book containing a vast amount of useful and valuable information is just off the press.

Send for it today

WILLIAMSPORT WIRE ROPE COMPANY

Main Office and Works, Williamsport, Penn. **General Sales Offices, Peoples Gas Bldg. Chicago**

For your convenience in writing to Williamsport Wire Rope Company, you will find a card bound in this issue.

Shots From the Firing Line — *Continued*

Ohio Notes
By S. R. WALLER

We learn with regret of the sudden passing on May 11th of Railroad Contractor J. T. Adams of Columbus.

The Hamilton Gravel Company recently used their Bucyrus-Erie 1020 gasoline dragline to break up the concrete apron of an old dam, and to excavate and build shallow coffer dams near Hamilton, Ohio. Most of the digging consisted of gravel and clay to which the 1020 was easily adapted. The machine is shown in the above illustration loading spoil into a Schacht truck. W. P. Watson is Manager of the Hamilton Gravel Company.

Detroit and Vicinity
By G. E. PETERSON

Brown Brothers Construction Company of Battle Creek has been awarded 7.5 miles of gravel road construction in Barry County by the Barry County Road Commission. The job calls for around 65,000 cubic yards of excavation and surfacing with gravel. The Brown Brothers Construction Company is also doing some road work in Allegan County this year.

The Smith Paving Company of Dearborn, has been awarded 6.4 miles of 20 ft. concrete in Alpina County. This job has 150,000 cubic yards of excavation.

There are six shovels going after the excavating on the **Handeyside job in Lapeer County** on M-24. These include five Bucyrus-Eries, three steamers and two Gas+Airs, and a Lorain ¾ yd. machine.

The Frank O'Kray Construction Company has started work on a grade separation job on the 8 Mile Road and the Grand Trunk R.R. F. C. Atlewed is Superintendent on the job.

The above illustration, looking east on Gratiot Avenue, Detroit, shows the Bucyrus-Erie B-2 owned by **Furnari Bros.**, digging on a rather steep grade. The work consists of widening Gratiot Avenue near Mack Avenue to form a super-highway. This has meant that many old buildings have been cut in half to conform to the new lot line, others have been wrecked, while it is expected that many new ones will be built.

The Louis Garavaglia Company is doing the excavation for a grade separation at Ford Road, Oakman Boulevard and the Pere Marquette Railroad.

Briggs and Cheney Construction Company of Dansville is building 6.2 miles of gravel road for the Ingham County Road Commission.

Louis and Frisinger of Ann Arbor have 5.4 miles of 20 ft. concrete in Kent County on M-44.

The Michigan State Legislature has passed a bill providing for taking over by the County Road Commissions of all the Townships roads in the State. The measure includes a plan whereby 20% of the Township roads will be turned over annually and also that the several Counties of the State shall receive additional funds in proportion from the State Highway Department. This bill is important in that it will result in **better Township roads** in the State of Michigan.

Macomb County Road Commission is putting in about 25 miles of "Black Top" on gravel roads this year. The work is under the supervision of W. T. McKenney, Superintendent of the Construction Department.

Building a 40 Foot Fill

Raising this 40 foot fill on a railroad construction job, without the use of jacks—or the building of a trestle, is just one of the many instances where the Track Machine has been used at a great saving in time and labor. Disposing of overburden at quarries and mines, or any similar job where a track gang is maintained for shifting and raising, this machine and a few men will do the job quickly and soon pay for itself out of expense ordinarily required for men working with bars and jacks.

NORDBERG MFG. CO., Milwaukee, Wis.

THE NORDBERG PATENTED TRACK SHIFTER

MEETING PLACE OF CAPITAL AND LABOR

THE KOENIG LABOR AGENCIES

Established 1875

ST. LOUIS
612 Walnut Street
Main 2766 and 2767

KANSAS CITY
501 Delaware Street
Main 0796

HELP OF ALL KINDS FURNISHED FREE

For your convenience in writing to the advertisers on this page you will find a card bound in this issue.

State Highway Commissioner Grover C. Dillman, has been appointed Vice-President of the Central District of the American Road Builders Association.

Here we have Don Hayman's, Bucyrus-Erie B-2 shovel grading a road on Whittier Avenue near East Warren. Although the shrubs and bushes make rather inconvenient digging, the paving is to be laid on both sides of a parkway, and they will undoubtedly help to make it one of the finest streets on Detroit's east side. The Mack truck is somewhat obscured due to the fact that much dry grass is being burnt.

Whitlow and Holbeck Construction Company of South Haven are low bidders on 10 miles of 20 foot concrete in Midland County. There are 180,000 cubic yards of excavation in this work.

The C. A. Handeyside Company of Detroit are low bidders on 3.4 miles of 20 foot concrete in Genesee and Shiawasse Counties.

The Iianni Construction Company, Detroit, are low bidders on 12.2 miles of grading and drainage structures in Lapeer County.

Michigan Notes

By D. S. WATTERS

A large amount of interest is being shown in the new Bucyrus-Erie 170-B 5-yard electric heavy duty shovel at the **Thunder Bay Quarries Company operations** at Alpena, Michigan not only by the Thunder Bay employees but also by men who work at the nearby quarries of the Michigan Alkali Company and Kelley Island Lime & Transport Company at Rockport. To most of them a large electric full-revolving quarry shovel, so entirely different from the old railroad type shovels, is quite a novelty. At the time this is written a new shovel is ready to go to work as soon as the power line reaches it. President Windeaker, General Manager Perigren and Superintendent Yauch all say they are expecting great things of this machine. We'll let you know soon who is "pullin' the levers."

The shipping season for the quarries along the Great Lakes opened early in May. Boats found full bins waiting for them at Rogers City, Rockport, Alpena, Alabaster and other points. It is too early to predict how large shipments will be this season.

Chicago and Vicinity

By H. C. HELT

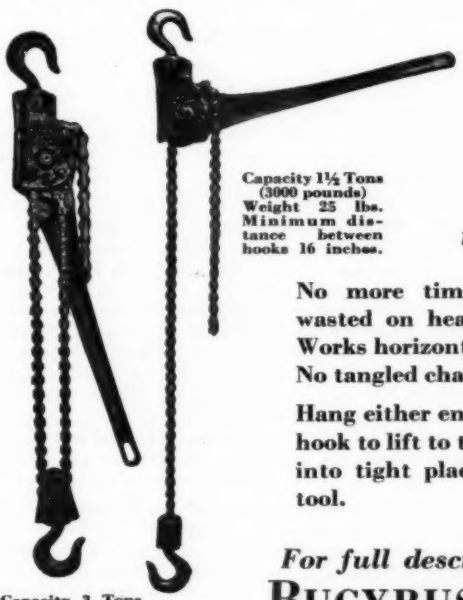
The H. H. Enbody Company of Aurora, subbed the grading and shovel work on the C. E. Carson Company paving job on State Highway route 82 near Geneseo. There were nearly 400,000 yards in the total job and Maurice Enbody is making the dirt move with two elevating graders and a 1¼-yard gas shovel.

Berns Brothers Construction Company of Indianapolis is at work on their State Highway project near New Castle, Indiana. Berns Brothers bid was $198,567.39. There is about 200,000 yards of excavating on this job and **Swords, McDougal & Knapp** of Peoria are moving the dirt for them as sub-contractors.

Often pay for themselves in the first week of service

HANDY HOISTS

now offered in four sizes



Capacity 1½ Tons (3000 pounds) Weight 25 lbs. Minimum distance between hooks 16 inches.

Capacity 3 Tons (6000 pounds) Weight 31 lbs. Minimum distance between hooks 17 inches.

No more time and backache wasted on heavy chain blocks. Works horizontally or vertically. No tangled chain.

Hang either end up, just a light hook to lift to the support. Gets into tight places. A one man tool.

Capacity ¾ Ton (1500 pounds) Weight 14 lbs. Minimum distance between hooks 13 inches.

Capacity 6 Tons (12000 pounds) Weight 65 lbs. Minimum distance between hooks 25 inches.

For full description and prices write to

BUCYRUS-ERIE COMPANY

SPECIALTY DEPARTMENT
South Milwaukee,
Wisconsin, U.S.A.

BUCYRUS ERIE

For your convenience in writing to Bucyrus-Erie Company, Specialty Department, you will find a card bound in this issue.

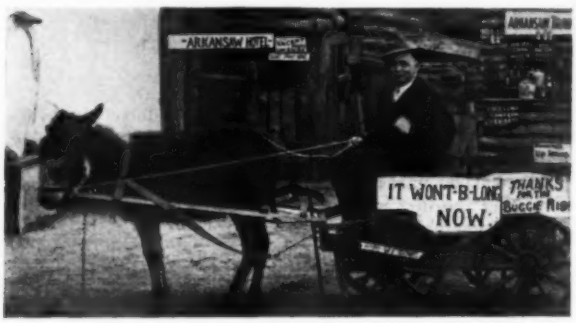
Shots From the Firing Line — *Continued*

Darrow & Barron of Waukegan, are getting started on their paving job for the State Highway Department in Illinois near Waukegan. This job amounts to nearly $350,000.00 and is eleven miles long.

P. B. Putnam of Ft. Wayne, was low bidder on Indiana state highway project No. FA 219-B. His bid was $161,294.39. The bids were opened on this project on May 5th at Indianapolis, Indiana.

H. P. Stubblefield of Indianola, Illinois, was second low bidder on the Beaver drainage district job of 660,000 yards near Kankakee, Illinois. E. Martocks was low but was not awarded the job. Mr. Stubblefield expects to get the work on his bid.

H. Cleory of 1818 Hancock Street, Rockford, an old shovel operator, has invented a new mechanical dipper trip for gas and Diesel shovels. He has been connected with **Anderson Brothers Company** of Rockford and has installed his new trip on one of their shovels.

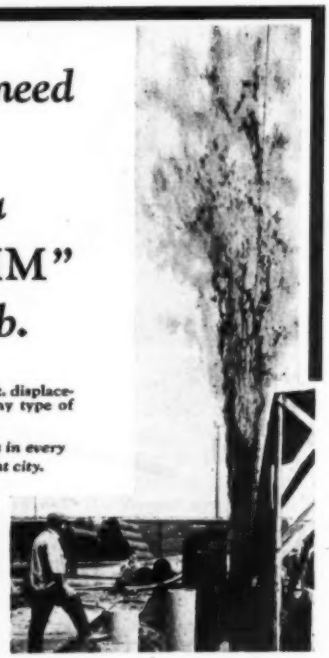


Wm. Iverson, well known shovel operator of Chicago, made a little trip around the country, including a little Arkansas jaunt in the late model shown above.

When you need
AIR
there is a
"SCHRAMM"
for any job.

1 to 720 cu. ft. displacements in any type of mounting.

Distributors in every important city.

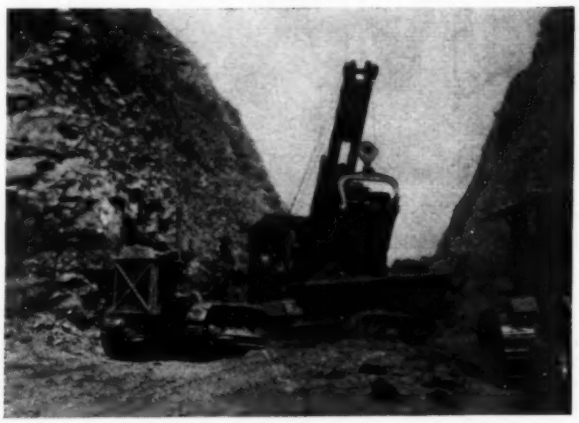


Schramm

WEST CHESTER, PENNSYLVANIA

L. E. MacDonald, formerly salesman of the Chicago Office of the Bucyrus-Erie Company, has been transferred to the Detroit office as district sales manager for Bucyrus-Erie Company on small shovels. We miss Larry's hearty laugh and happy smile in the Chicago territory.

Indiana Notes



Ellis & Brantley and Ellis & Scamahorn, who last fall sublet from J. C. Ellis, a grading contractor, to clear a six-mile stretch of rough sand stone highway between Shoales and Loogootee, Indiana, are doing a most interesting job of road building. One cut through solid sandstone road is 500 feet long by 78 feet deep, 58,000 cubic yards of "hard stuff" being removed from this section.

Eight Caterpillar Sixty tractors, eleven Western Athey Truss Wheel crawler dump wagons, three Caterpillar Thirty tractors, a pair of rollers, three bulldozers, two Ingersoll-Rand compressors and four Lorain 1¼-yard gas shovels, and an elevating grader are being used on this project. G. L. Brantley is in charge of the operations. The record output is 82,000 yards of material placed in one month's time, of which Mr. Brantley and his organization are justly proud.

Northwest Notes

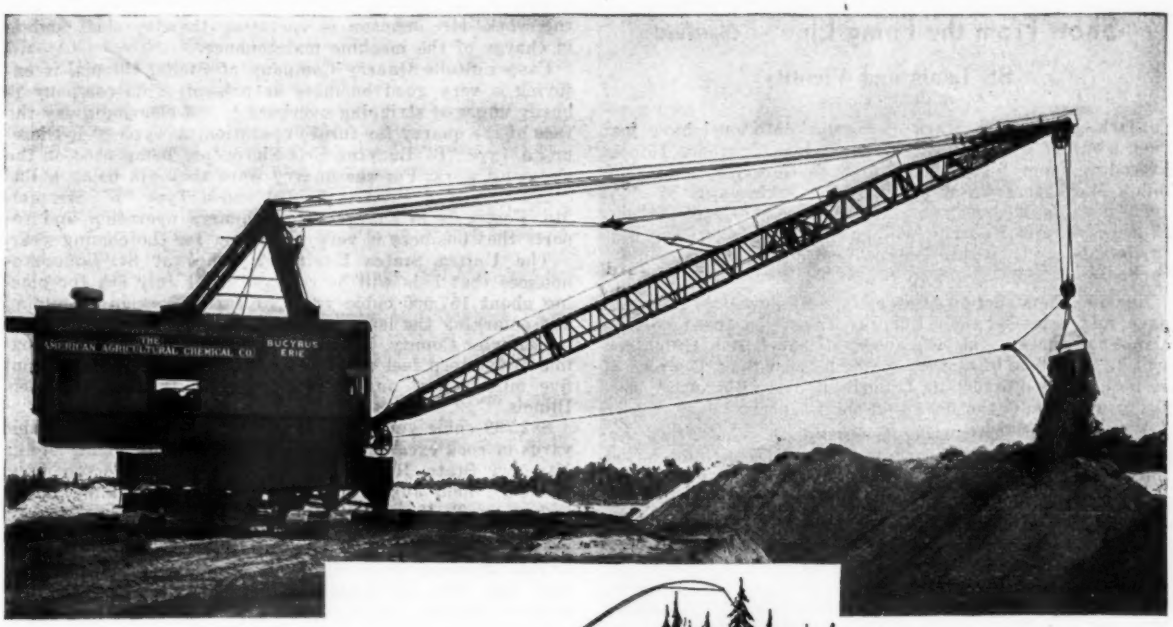
By H. L. JONES

In the letting on May 19, **S. J. Groves & Sons** received a contract for a subgrade excavation on the job extending from 3½ miles west of Fairfax to Winthrop, a distance of 21.3 miles, 191,000 cubic yards of grading and subgrade excavation are involved.

In the letting held June 2nd at the Minnesota Highway Department, **Barnard & Curtiss** of Minneapolis received a job of grading 9.9 miles between Brainerd and 5 miles west of Ironton involving 403,350 cubic yards. **R. P. England** of Mitchell, South Dakota, received a contract covering a grading job, extending 10.8 miles, from a point 2 miles east of the west Redwood County line to Junction T H No. 67; yardage, 250,500 cubic yards. **Charles Weaver** of Anoka, received an 18.7 mile grading job between Montevideo and Granite Falls. The excavating will total 762,200 cubic yards. **Strom Construction Company** of Garry, Minn., received a grading job of 14.4 miles between Battle Lake and Henning. Estimated excavation involved amounts to 463,800 cubic yards.

J. H. Ravlin, the new president of the Engineers' Club of Minneapolis, is a gradute of the University of Iowa, in civil engineering, class of 1911. After graduation, he spent a year with the Delaware, Lackawanna, & Western R. R. The following three years were with the Barnett & McQueen Construction Company, Ltd., of Fort William, Ont. He left this company to become associated with the Barnett & Record Company of Minneapolis where he has been ever since. Mr. Ravlin has been a member of the Engineers' Club for about ten years, and has been prominent in its various activities.

For your convenience in writing to Schramm, Inc., you will find a card bound in this issue.



A Perfect Cast and a Swift Return

...*When* ELECTRICITY *Tosses the Bucket*

DRAGLINE operation becomes as graceful—as accurate—as the casts of an expert fisherman when G-E electric drive helps toss the bucket. Upgrade or down, G-E electric drive with variable-voltage control places every movement of the flying bucket under perfect control—assuring an accurate cast and a swift, easy return.

No matter whether you are using dragline or shovel—no matter whether you are dragging or shoveling in sand, clay, or stone, you'll always find an extra advantage in reliability and power in G-E electric equipment. Unfailing dependability, dogged strength, close—*exact*—control, simplified design, and economy of operation—all characterize G-E drives for shovels—all serve to make G-E drive the choice of thoughtful contractors.

An inquiry addressed to your nearest G-E office will bring you detailed information.

JOIN US IN THE GENERAL ELECTRIC PROGRAM, BROADCAST EVERY SATURDAY EVENING ON A NATION-WIDE N.B.C. NETWORK

200-489

GENERAL ELECTRIC

SALES AND ENGINEERING SERVICE IN PRINCIPAL CITIES

For your convenience in writing to General Electric Company, you will find a card bound in this issue.

Shots From the Firing Line — *Continued*

St. Louis and Vicinity

By W. C. VINES

Clark, Kearney & Stark of Hanibal, Missouri have just been awarded a very nice grading job in Southern Illinois extending from W. Vienna North to Goreville, about ten miles. Work consists of about 15,000 cubic yards of rock, 100,000 yards of shovel dirt, and about 75,000 yards of machine work. Jim Kearney will pull the levers on their Bucyrus-Erie GA-2 on this job and L. B. Clark will personally supervise the work.

Carlon Construction Company, Maplewood, Missouri, have just unloaded their Bucyrus-Erie Type 1035 one-yard clam-shell machine at Ridgeway, Missouri, Bob Hutcheson will be in charge of operation which consists of 12 miles of 10 foot concrete extending from Bethany to Ridgeway. Oley Olson will handle the levers on the Crane.

Fruin-Colnon Contracting Company, St. Louis, has several Bucyrus-Erie units working on the Moline Creek Sewer job at Baden, St. Louis Suburb, consisting of a 3-W Bucyrus-Monighan, one E-2 Diesel and two Type B-2 Bucyrus-Erie steam clamshells. Quicksand handicapped the work at the start but this has finally been overcome and good progress is being made at this writing.

Service Construction Company, of Poplar Bluff, Missouri, is working its Type "B" Bucyrus-Erie shovel at Arcadia, Missouri on a Missouri State Highway project.

Hugh R. (Hickory) Smith is working his Type B-2 steamer on a road job at Hannibal, Missouri. Jack Sanders is pulling the levers on this machine for Mr. Smith. General Contractors for the job are Clark, Kearney & Stark.

Trogdon & Worman, of Hoxie, Arkansas are busily engaged on a road grading job between Hoxie and Jonesboro. This job consists of 100,000 yards of earth fill. They are using a 1-yard Type 1035 Bucyrus-Erie dragline, operating three eight-hour shifts. Mr. Trogdon has entire charge of the work. Mr. Johnson is operating the day shift and is in charge of the machine maintenance.

Casper Stolle Quarry Company of Stolle, Illinois, is enjoying a very good business at present. This company is busily engaged stripping overburden and clearing away the face of the quarry for future operation. A Type 30-B Diesel and a Type "B" Bucyrus-Erie Shovel are being used on the stripping work. For the quarry work they are using a Bucyrus-Erie 50-B Electric Shovel and a Type "B" Steamer. Mr. Foster is in charge of the quarry operation and reports that business is very promising for the coming year.

The United States Engineer's Office at St. Louis announces that bids will be received until July 8th for placing about 157,000 cubic yards of earth work in rebuilding and enlarging the levee of the district on the Illinois River in Schuyler County, Illinois. The average height is approximately sixteen feet and the length 7400. The work is about five miles below and across the river from Beardstown, Illinois.

882,739 cubic yards of earth excavation and 85,412 cubic yards of rock excavation were included in the letting of the Missouri State Highway Commission at Jefferson City, Missouri, held June 26th according to the bidding notice issued by T. H. Cutler, Chief Engineer.

By A. J. KOENIG

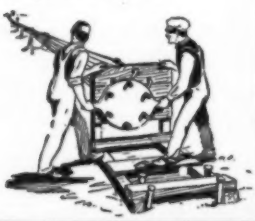
The Missouri State Highway Commission is receiving bids June 26th on **41 highway projects** consisting of 13.57 miles of grading, 79.75 miles of gravel and chat roads, 20.59 miles of concrete and 14.87 miles of concrete and gravel; a total of 128 miles.

At the letting May 29th the following were the low bidders:

1.190 miles gravel, Benton county, A. E. Kieth Const. Co., Kansas City, $14,395.

8.949 miles gravel, Madison and Bellinger counties, $44,-682; 3.643 miles gravel, Franklin county, $26,441; 4.988 miles grading, Madison county, $5,952, to Carte-Harlin Const. Co., West Plains, Mo.

Since Blast Holes were Drilled by Hand



THE first B & B Wire Ropes were made on an old fashioned "rope walk" in 1876, when many blast holes were drilled by hand, when dredges had no cutters, scrapers used horse power, and such powerful rope as Yellow Strand was not essential.

Since its introduction, Yellow Strand's elasticity and strength have been equal to every advance made in excavating machinery. Prove it by a trial.

Get Catalog 51

Broderick & Bascom Rope Co.

St. Louis

New York Houston Portland Seattle

FACTORIES: St. Louis and Seattle

Wire for all B&B Ropes undergoes many important laboratory tests before being laid up into rope.

P9

YELLOW STRAND WIRE ROPE

MADE OF WIRE DRAWN TO OUR SPECIFICATIONS FROM GENUINE SWEDISH STOCK

For your convenience in writing to Broderick & Bascom Rope Co., you will find a card bound in this issue.

5.868 miles shale, Boone county, $31,697 to Samples & Elsea, Kirksville, Mo.

17.122 miles concrete, Calloway county, $239,085, to Harrison Eng. & Const. Co., Kansas City.

8.447 miles grading, Chariton county, $42,132, to B. F. Brooks Const. Co., Dallas, Texas.

6.183 miles gravel, Clark and Scotland counties, $74,515; 25.582 miles gravel, Dallas and Laclede counties, $225,879; 20.2 miles gravel, Lewis and Marion counties, $12,436; 6.515 miles gravel, Montgomery county, $43,849 and 2.231 miles gravel, Worth county, $19,296, to Martin Wunderlich, St. Paul, Minn.

5.23 miles concrete, Livingston county, $41,519, to Carroll Const. Co., Carrollton, Mo.

2.829 miles grading, Madison county, to Campbell, Davis & Schulze, Troy, Mo., $14,397.

8.359 miles gravel, Madison county, to Fellin Bros., Marshfield, Mo., $3,463.

11.47 miles concrete, Daviess county, to Carlon Const. Co., Maplewood, Mo., $131,628.

3.295 miles chats, Daviess county, to Jewett & Hardy, Shelbina, Mo., $17,110.

17.628 miles concrete, Franklin and Gasconade counties, to Hoeffken Bros., Belleville, Ill., $176,494.

3.636 miles grading, Lafayette county, to L. W. Sprengler Const. Co., Kansas City, Mo., $37,189.

6.141 miles concrete, Vernon county, Independent Const. Co., Pittsburg, Kans., $117,480.

1.045 miles gravel, Washington county, Linus Penzel, Jackson, Mo., $12,474.

5.83 miles gravel, Wright county, $18,650; 18.276 miles gravel, Texas county, $14,475, Chaney & Amyx, Branson, Mo.

1.799 miles gravel, New Madrid county, $1,356, Don Fike, Competition, Mo.

3.56 miles gravel, Pemiscot county, Lahar Const. Co., Boonville, Mo., $18,040.

7.198 miles concrete, Pike county, $101,538, W. C. Meneely Co., Clayton, Mo.

2.779 miles concrete or asphalt, St. Louis county, Chas. N. Lund, St. Louis, Mo.

2.011 miles concrete, St. Louis county, Geo. W. Condon, Omaha, Nebr., $102,326.

5.486 miles concrete, Stoddard county, Jos. Kesl & Sons, Edwardsville, Ill., $106,095.

Contracts for 29.37 miles of paving and 12.74 miles of grading were let by the Illinois State Highway Commission on May 30th. **F. E. Lefferdink**, Lincoln, Ill., was awarded the contracts for the grading, 7.96 miles in Effingham county and 4.46 miles in Jackson county. **Hartmann-Clark Bros.**, Peoria, were awarded contracts for paving in Piatt, Macon and DeWitt counties. **Hanes & Kilgo Const. Co.**, Alton, Ill., were awarded 4.77 miles of paving in Macoupin county.

Kansas City Bridge Co. was the successful bidder for the construction of dikes and revetments in Berlin and Baltimore Bends on the Missouri River. Their estimate on these projects was $326,189, the lowest of seven bids received.

Contract for the pedestrian underpass at Twelfth and Market Sts. in St. Louis, Mo., was awarded to **Woermann Const. Co.** of this city on their bid of $15,777.

United States Engineers office at St. Louis, Mo., asked for bids for the **rebuilding and enlargment of levees** in the South Beardstown Drainage and Levee District, Cass county, Ill. Estimated yardage 287,000.

Wood Bros. Const. Co., Lincoln, Nebr., was awarded contract for the construction of a bridge over the Cimarron River near Guthrie, Okla.

Kansas City and Vicinity

By THEO. W. SMITH

Kansas City's **new $4,000,000.00 Post Office job** has been awarded and the preliminary work has started. Ring Construction Company of Minneapolis, Minnesota, are the general contractors on this job and many Kansas City contractors will have the opportunity of obtaining subcontracts on this work.

The $40,000,000.00 Bond Issue of Kansas City has carried by a large majority. This is one of the best things that

MORE DIRT IS PAY DIRT

OWEN Buckets are built to "deliver the goods" at a profit to the owner. That means making every load count — count big. A capacity load every time — that's pay dirt because it shortens the job, lightens the labor, and lowers the cost. With an Owen, every bite tells — more dirt per trip — pay dirt.

That's how an Owen handles the job — extra yardage on every trip — hours saved, often days. It's easy to see why — Send for illustrated folder containing the 17 points of Owen construction — they explain.

The Owen Bucket Company
6026 Breakwater Ave., Cleveland, Ohio

A Mouthful At Every Bite

Owen Buckets

For your convenience in writing to The Owen Bucket Company, you will find a card bound in this issue.

Shots From the Firing Line — *Continued*

could have happened in this territory with the present existing conditions, which has furnished an opportune time for the people of Kansas City to express the faith that they have in their city. All of this money is to be spent in the construction of public buildings, roads, and in making city-wide improvements. A new hall is to be started immediately replacing the present Convention Hall. This will give Kansas City an opportunity to secure the next Democratic Convention.

Black & Veatch, Engineers on the **new Wichita Disposal Plant**, have rejected all the bids opened on June the 2nd. New requests for bids were made and these will be opened in July. The estimate on this plant is about $400,000.00 and many contractors are bidding on it.

Kansas and Missouri are beginning their summer work in the building of **Farm to Market Roads.** Missouri is drifting away from the oiled-dirt roads and is building many county roads of a gravel and an asphalt composition, which will give the farmers of the state the benefits of hard-surface roads. Kansas, as in past years, is making the most of its roads of gravel surface.

Kansas Notes

By H. E. SNIPE

E. W. Kolterman, well known Omaha contractor, is busy grading Highway No. 40-N near Stockton, Kansas. This job consists of approximately 450,000 yards, 60,000 yards of rock excavation, and the remainder of earth excavation. Mr. Kolterman is using a Bucyrus-Erie GA-2 shovel with Linn trucks hauling to the fills. He also is using an elevating grader and the hauling equipment consists of one Monarch 75, and five Caterpillar Sixty's, with Western bottom-dump crawler wagons. Mr. Koontz is Superintendent of shovel work and Operator Fogg is putting the GA-2 shovel through her paces. The shovel is operating two eight hour shifts. Mr. Woods is operating the night shift. Mr. Donahue is in charge of the elevating graders. Mr. Kolterman has a first class outfit and is certainly moving a lot of material with the able assistance of his supertendents. The accompanying illustration shows the type of work being done.

By C. F. BARTON

Benson-Kaiser & Company, Inc., prominent railroad contractors of St. Louis, are using the above outfit on their 400,000 yard job of grading for the Missouri Pacific near Herington, Kansas. This work is subbed from the List Construction Company of Kansas City. Henry Daley is Superintendent in charge on this job with Mike Daley as walking boss. Operator Harry "Red" Martin, handling the levers on the 1¾-yard Bucyrus-Erie 43-B, says: "This 43-B is a go-getter. Loaded 324 5-yard cars today in 9 hours and 30 minutes. She's still a bit new to me at that. Just wait till I get the hang of this rig and then we'll really go some." The 43-B has a Wisconsin Type E gasoline motor. Two trains of 10 Western 5-yard dump cars behind Whitcomb gas dinkies with Waukesha power plants are hauling from this shovel now and another Whitcomb and train of Westerns is to be put on soon.

Since the above was written we hear that "Red" and the 43-B loaded out five-hundred five-yard Western Dump Cars in a ten-hour period. This record was accomplished loading block to block as the illustration shows.

Nevada Notes

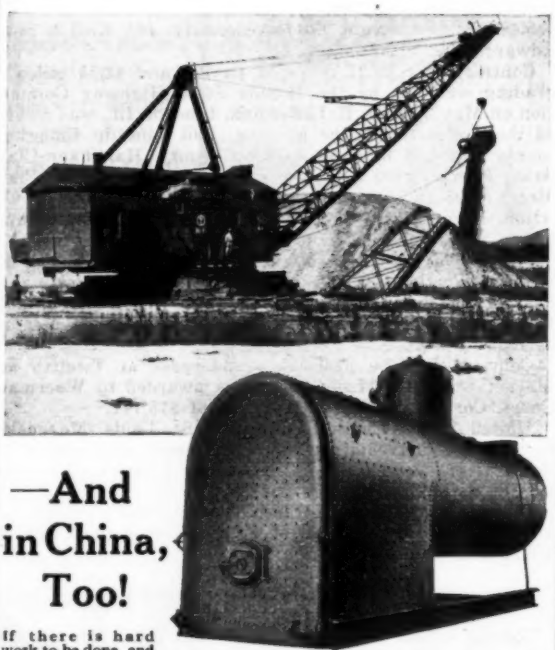
Wheelwright Construction Company of Ogden, Utah, have been awarded contract for construction of the State Highway in White Pine County, between Conner's Pass and Ely. Their bid was $93,139.51.

Nevada Rock and Sand Company, Inc., of Reno, Nevada, were awarded the state highway contract in Lyon County between Wilson's and the Mouth of Wilson Canyon on their bid of $34,039.88.

General Construcstion Corporation, Las Vegas, was awarded contract for construction of Federal Aid Highway in Clark County between Fifth and Fremont Streets and the Southeast City Limits of Las Vegas. The amount of the bid was $19,209.10.

"Just like Hades itself," gasped an American lady as she gazed at Mt. Vesuvius in full eruption.

"Ah, zese Americans," exclaimed a Frenchman, "where have zey not been!"



If there is hard work to be done, and much of it, a JOHNSTON Boiler will help you do it the most expertly.

Of all things, you must have dependability in a boiler, that's why JOHNSTON Boilers are shipped to all corners of the earth.

JOHNSTON BROTHERS, Inc.

Box No. 310 - FERRYSBURG, MICH.

Washington Notes

By E. L. BOOTH

Myers & Goulter, contractors of Seattle have had two or three jobs going right along and have been using Bucyrus-Erie shovels on all of them. Their 20-B shovels are working on a contract job in Oregon. Their D-2 Diesel shovel has just completed excavation work at Entiat, Washington, and has been moved to new work at Mt. Rainier, near Ashford. Another D-2 shovel is working on a job at Thorp, Washington, which we understand is rapidly nearing completion.

Halleran Brothers of Seattle, have a State highway contract at Twisp, Washington and are using a Bucyrus-Erie 20-B on this work. Reports indicate that everything is going fine and they are maintaining their usual high yardage average.

Coyle Construction Company, another Seattle concern, has started work on another highway contract in the State of Washington just beyond the town of Concrete in the Skagit River country. This new unit of work is a continuation of excavating work which this company completed early in the year. Bucyrus-Erie 20-B shovel is still taking care of the heavy part of this excavation.

James H. Coyne of Port Angeles, is operating a Bucyrus-Erie 1030 with a drag shovel attachment on a public works contract near Port Townsend and reports received from both the Superintendent, Wm. Bugge, and the operator, Martin O'Toole, indicate that the work is progressing well and the drag shovel attachment is highly satisfactory.

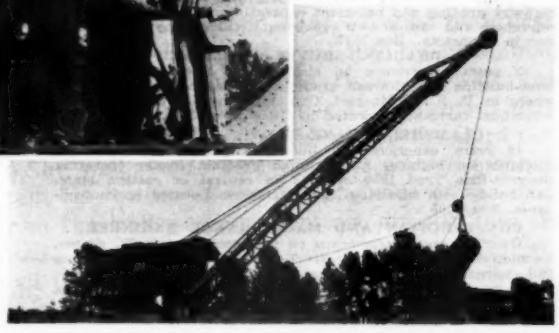
The Washington State Highway Department has been using a Bucyrus-Erie 20-B shovel on highway construction work at the foot of Blewitt Pass in the Cascade Mountains about 100 miles from Seattle. This work is under the direction of Mr. Thompson of the State Highway Department and from reports received, the machine is giving the usual good account of itself.

M. E. Nelson Construction Company of Tonasket, Washington, has recently completed construction work near Oroville, and has moved the 20-B shovel to new work at Riverside. George Timpke is operating this machine.

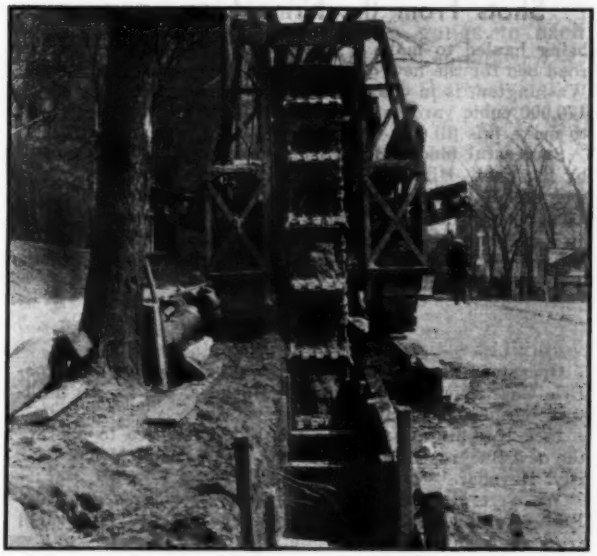
Oregon Notes

By MARC D. TROYER

The accompanying pictures show the Bucyrus-Erie 50-B Diesel shovel owned by the **General Construction Company** of Seattle, Washington, operating on the South unit of the Oregon City-Portland Super Highway at Oregon City, Oregon. In the smaller picture are W. E. Beam, operator of one of the shifts, and L. J. Montgomery, formerly with S. H. Newell of Portland, and who has been operating for Newell in Utah recently, and O. B. Bjorge, Manager of the Clyde Equipment Company, Portland.



The 50-B is operating on a gravel bar at the mouth of the Clackamas River, where it runs into the Willamette River, and which is owned by Fred Morey of Oregon City, Oregon. This machine has a 50-foot boom with 10-foot extension, handling a 1½-yard dragline bucket, and is equipped with an Atlas-Imperial Diesel engine. The material is



Its Digging Range and Buckeye's Reputation Sold This Model 140 *Service* Ditcher

Contractor H. O. Schaefer, Inc., West Allis, Wisconsin, tells just why he purchased his Model 140 and expresses his satisfaction with its performance. Here's his own story: "We bought our Service Ditcher because its price and digging range appealed to us, and because of the good reputation of Buckeyes around this district. We have had no occasion to regret our decision.

"While small, our Buckeye Service Ditcher cuts quite deep. It averages 520 lineal feet of 2-foot by 9-foot trench in 8 hours. Its boom sets at the proper angle — not straight up and down, thereby undermining the machine when excavating in bad ground. Full-length Alligator Crawlers make for a short, compact ditcher and easy maneuvering. Power operated, reversible, highly mounted conveyor is very advantageous as is also the method of raising boom over trench. We like being able to dig backward, when necessary.

"We had considerable water main trenches to cut here in Milwaukee, immediately back of and alongside curbs, and had to clear telephone poles and trees. With our Model 140 we also cut several miles of sewer and water trenches in boulder ground at Pewaukee, Wisconsin."

May we send you our new folder illustrating and describing profitable Model 140 . . . and its interesting price?

The Buckeye Traction Ditcher Co.
Findlay, Ohio

There's a Buckeye Sales and Service Office near You

for over thirty years **Buckeye**

For your convenience in writing to The Buckeye Traction Ditcher Co., you will find a card bound in this issue.

Shots From the Firing Line — *Continued*

being hauled to make a fill ¾ of a mile long to form a road bed for the new highway. R. E. Woodward, of Seattle, Washington, is in charge of the work. There will be about 170,000 cubic yards of gravel to load into trucks, and haul to make this fill.

Successful bidders on a 53.26 mile grading contract let by the State Highway Commission were: **Earl L. McNutt** and **Guy F. Pyle, Eugene**, on Pike Ranch—Harney County Line Section in Lake County, and **C. R. Johnson**, Portland on Valley Falls—Pike Ranch Section. Amounts were $137,680 and $128,529.50. Corrugated iron pipe culverts will be used on both sections.

California Notes

By J. H. SACKETT

Operators Vernon and Grover are operating the Bucyrus-Erie Gas+Air shovel for **Chas. Harlowe, Jr.**, on his highway job between Blairsden and Portola.

Jack Knight just recently left San Francisco to operate the new Bucyrus-Erie GA-3 shovel for **W. K. McMillan** near Ely, Nevada.

We were all glad to welcome Jack Nichols back to San Francisco and pleased to know that he has fully recovered from his burns sustained while working at Yreka.

Operator W. N. Cameron is handling the Bucyrus-Erie 20-B gasoline clamshell for **Louis J. Cohn**, excavating for foundation piers in the San Francisco War Memorial at the Civic Center.

We had a visit a few days ago from George Herbert Utley, who is operating the Bucyrus-Erie Gas+Air machine for the **Treadwell-Yukan Company** at Bodie. He says the machine is giving splendid results.

Merritt, Chapman & Scott Corporation was recently awarded a job by the Bureau of Public Roads, Ogden, Utah, for 2.9 miles of grading and surfacing Floor of the Valley Road, Zion National Park, Utah.

Everly & Allison, Des Moines, New Mexico, were recently awarded contract by the Bureau of Public Roads, Phoenix, Arizona, for 16 miles grading, on the Petrified National Forest Highway, Apache and Navajo Counties, Arizona.

W. E. Callahan Construction Company of Dallas, Texas, was recently awarded contract by the Bureau of Public Roads, Phoenix, Arizona, for the construction of concrete and steel Rio Puerco and Dry Creek Bridges in the Petrified Memorial Highway, Apache County, Arizona.

The Lee Moor Contracting Co., Tucson, Arizona was awarded contract on their bid of $152,653.00 by the State of Arizona for 7.2 miles of Blythe-Wickenburg Highway from near Gonzales Well east toward Quartzsite.

Santiago Dam, 12 miles east of Santa Ana, California is being constructed by **R. G. LeTourneau, Inc.** It requires moving one million yards of dirt, is 650 feet deep, 130 feet high and approximately 4000 feet wide. It will impound 35,000 acre feet of water to be used for irrigation purposes. Two shifts are worked, the job running from 7 A. M. to 11 P. M. The illustration shows LeTourneau dump wagons being loaded by the second shift. Six Caterpillar Sixties are on the job.

POSITIONS WANTED

Space under this heading is available at $5.50 per inch or fraction thereof.

Address all box numbers c/o The Excavating Engineer at South Milwaukee, Wisconsin

SHOVEL OPERATOR

Operator of 19 years' experience wants position on Bucyrus-Erie 100-B, 120-B or 50-B electric. Can give good references. Can do own repairing. Go anywhere, preferably in the west. Located state of Washington. Box 1607

DRAGLINE OPERATOR

Experienced on gasoline draglines on sewer and waterway work. Willing to go anywhere in U. S. A. Married. Can do own repair work and furnish reliable references. Present location, Missouri. Box 1608

DRAGLINE OPERATOR

11 years' experience on steam and Diesel machines. Excellent repair man. Would prefer operating a Bucyrus-Erie 50-B anywhere. Can furnish reliable references. Present location, New York. Box 1609

DRAGLINE-CRANE-CLAMSHELL OPERATOR

All-around operator with over 23 years' experience on all types of excavating, materials handling, drainage and irrigation work. Will go anywhere in U. S. A. Can do own repairing and furnish the best of references. Married. Present location, Wisconsin. Box 1610

DRAGLINE OPERATOR

28 years' operating electric, gasoline and steam machines on all types of excavating and dragline work. Available immediately for work in any part of U. S. A. First class repair man. A-1 references. Married. Present location, Florida. Box 1611

SHOVEL OPERATOR

20 years' experience on Bucyrus-Erie and Marion electric and steam machines on grading and coal stripping operations. Married. Willing to go anywhere in U. S. A. Excellent references. Can do own repair work. Present location in Kansas. Box 1602

DRAGLINE-SHOVEL-CRANE OPERATOR

Experience includes years on gasoline and steam machines on grading, drainage, sewer and building work. Prefer dragline work, but will consider any offer. Married. Can do own repair work and furnish good references. Located in Indiana. Box 1603

SHOVEL OPERATOR

Experience covers years of operating in rock quarries, dirt and shale excavating and loading. Will go anywhere in U. S. A. Can do own repairing and can submit excellent references as to character and ability. Located in Kansas. Box 1606

SHOVEL OPERATOR

12 years' experience on Gas + Air and steam machines on highway grading and basement excavating. Can furnish reliable references and can do own repairing. Will go anywhere. Location in Minnesota. Box 1517.

DRAGLINE-SHOVEL OPERATOR

9 years' experience on electric and steam machines on levee-building and railroad grading. Prefer dragline work anywhere in U. S. A. Married. Can do all repair work. Reliable references furnished. Located in Ohio. Box 1604

CLAMSHELL-CRANE-SHOVEL OPERATOR

18 years' experience on Bucyrus-Erie gasoline and steam machines on highway and railroad grading. Prefer operating Bucyrus-Erie Type 1030 or 1035 in central or eastern state. Can handle own repairing. A-1 references. Located in Pennsylvania. Box 1605

CONSTRUCTION AND MAINTENANCE ENGINEER

Over 25 years' experience on all types of shovels, cranes, locomotives on general construction work. Capable of taking full charge of crew. At present located in Australia. Available for work in New Zealand, China, or Federated Malay States. Can furnish excellent recommendations. Box 1612

DRAGLINE-SHOVEL OPERATOR

Experienced on electric, gasoline and steam machines on highway grading, materials handling and steel hoisting. Will go anywhere in U. S. A. Married. Can do own repairing and furnish excellent references. Present location, Pennsylvania. Box 1601

POWDER MAN AND ROCK FOREMAN

10 years' experience in handling explosives, shaft or tunnel work, licensed to go anywhere. Can use Cordeau. A-1 references. Box 1614.

The Business Situation

(Continued from Page 339)

for the first five months of 1931 is ahead of the $54,418,900 reported during the similar period of 1930. Its only companion in this feat is the Central Northwest territory with a cumulative total of $41,163,600 for five months this year as compared with $38,065,900 in 1930.

Likewise the Central Northwest district (comprised of Minnesota, the Dakotas, Northern Peninsula of Michigan, and Northwest Wisconsin) shows a favorable residential cumulative total for the five months as does metropolitan New York and vicinity.

French Contractors Tell Why They Prefer Dragshovels

(Continued from Page 333)

(32.8 feet) from bottom of moat to parapet or about 3 meters (nearly 10 feet) from natural ground surface to parapet. The earth embankment behind the wall rises about a meter above the top of the masonry at its highest point and drops in steps to a height of about 3 meters (nearly 10 feet) about 15 meters (49 feet) back from the wall. Total thickness of wall and earth embankment is 30 meters (98.4 feet).

The projections from the wall or bastions (shown clearly in the sketches) are 100 meters (328 feet) in overall outside width and spaced from 200 to 300 meters (656 to 984 feet) apart. These project at right angles 15 meters (49 feet) then continue out to the center at a slight angle.

In planning their work Razel Freres considered securing the lowest possible haulage charge and achieving a maximum amount of direct overcasting with minimum of swing time. The methods by which they achieved these objects were as follows. First, they used one of their shovels to strip off the top of the bank down to the upper portion of the wall overcasting this into the moat as shown in sketch No. 1. Second, they overcast with draglines the earth back of the wall into the moat, making the first cut fartherest from the wall, (see sketch No. 2) the second one in the approximate center of the earth embankment and the third next to the wall itself. The counterscarp or embankment thrown up on the opposite side of the moat from the wall was also overcast directly into the moat. The next step was to open up breaches in the wall itself to permit the passage of the material which was too far back in the wall to be reached by overcasting. This was then loaded with a shovel to Euclid wagons drawn by Caterpillar tractors and hauled out through the breaches in the wall to be dumped into the areas of the moat which had not been filled by the direct dumping. At the same time gangs of men attack the wall from both sides of the breaches opened up (two gangs to each breach). A Caterpillar tractor with bull-dozer attachment was used for levelling off the material to the exact grade required.

Record Production by Bechtel Kaiser Company, Ltd. on Pipe Line

(Continued from Page 329)

Gang 1 for a certain 56 mile stretch, averaged 3.2 miles per day.

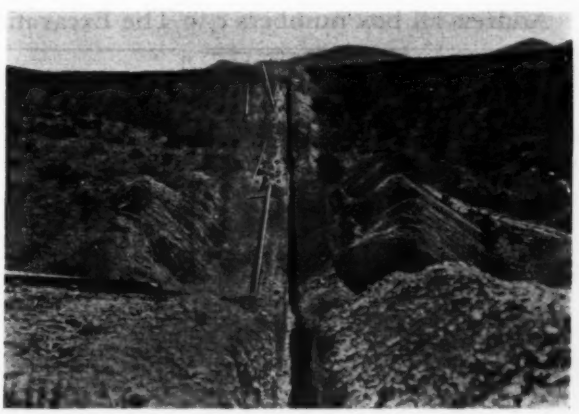
It is quite probable that in the above individual day's progress may be the establishment of a world record.

Personnel

The owners of this system are Paul Kayser and H. G. Frost, president and vice-president respectively of the Western Gas Company. A. L. Forbes, Jr., is general superintendent for both the El Paso Natural Gas Company and the Western Gas Company.

Ford Bacon and Davis, Incorporated, Engineers, handled the design and supervision of the engineering and inspection of the system with R. W. Strong, as resident engineer, and George O'Connor as chief inspector. Stone & Webster Engineering Corporation had charge of the building of four compressor stations in this system, and two booster stations in the original and previously built El Paso system, with W. D. Stewart and J. B. White as resident engineer and general superintendent respectively.

Bechtel Kaiser Company, Ltd., was represented in the field by C. P. Bedford, construction manager for the project, with Edgar F. Kaiser general superintendent and J. F. Reis assistant treasurer and manager of the project offices; and in the home offices by Henry J. Kaiser, and S. D. Bechtel, chairman and president respectively; by Joseph Shaw, development engineer; and G. G. Sherwood, secretary.



Have you ever seen a prettier piece of trenching than this job done by one of Bechtel Kaiser's Buckeyes?

BOOK REVIEWS

Small Generator Units and Their Applications, a new 12-page publication, is announced by the Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pa. It describes four different types of generators used where a small amount of electrical energy is necessary, but where no central station supply is available. Discussion is first from an apparatus and then from an application standpoint. The four types of generators described are: belt-driven, turbine, portable gas-engine-driven, and internal-combustion-engine-driven connected in parallel with storage batteries and the loads. On the last page appears a table of specifications covering the various sizes of each type of generator. The publication includes information concerning the application of these generators to outdoor construction, marine, small industrial plants, central stations, and emergency lighting.

Universal Atlas Handbook of Concrete Construction provides in convenient form, useful information on concrete—both plain and reinforced. It is written from a practical rather than technical standpoint. As it is not possible, in a book of this size (4½x7¼—208 pages), to give detailed information, on all types of structures, much of the subject matter deals with concrete in general so that the principles set forth may be easily adapted to special uses.

This valuable little book is published by Universal Atlas Cement Co., 208 E. LaSalle Street, Chicago, to whom inquiries regarding it should be directed.

"Concrete Facts for Concrete Contractors," a new booklet of 48 pages, just published for free distribution in the United States and Canada to builders, contractors and others doing concrete work around homes, schools, parks, playgrounds and industrial plants, includes the latest information on the modern methods for making quality concrete.

This 6x9 booklet, which is available on request to the **Portland Cement Association, 33 West Grand Avenue, Chicago, Illinois,** deals with concrete making, including facts on colored concrete, special surface finishes, forms, watertight concrete and cold weather construction. The methods described in the booklet are thoroughly practical and are being used by an increasing number of present-day contractors who are producing high quality concrete.

Useful and up-to-date information on concrete, both plain and reinforced, is contained in the new **Handbook of Concrete Construction,** just issued by the **Universal Atlas Cement Company,** subsidiary of United States Steel Corporation. Written from a practical rather than a technical standpoint, it makes no attempt to cover the field of large construction projects requiring skilled technical handling. It is a pocket manual of general information on concrete, applying particularly to smaller structures.

Beginning with a concise discussion on concrete as a construction material, it traces, step by step, methods of mixing, placing and curing concrete on the average job. This includes consideration of materials, equipment and labor and a clear presentation of the water-cement ratio method. The basic rules of reinforcing concrete are briefly presented. There follows discussion of forms for concrete, construction of small concrete structures and simple rules for estimating quantities and costs. The book has 208 pages, is well illustrated, and contains 48 accurate, easily read tables on quantities, sizes, loads, and so on. It has an excellent index.

Copies are available to contractors, engineers, and others to whom the book is of interest. Requests should be addressed to Handbook Department, Universal Atlas Cement Company, 208 South LaSalle Street, Chicago.

A complete description of **Armco Storm Sewers,** the requirements they meet and varied application and advantages together with complete instructions for ordering and installing them with ample illustrations are included in a very attractive booklet recently issued by the Armco Culvert Manufacturers Association of Middletown, Ohio.

If you would be interested in seeing this new 24-page catalog **"Armco Storm Sewers"** address your request to the above association, mentioning The Excavating Engineer.

Hydraulic Development Corporation, 50 Church Street, New York, N. Y., has just published a data book—8½x11 inches, 32 pages—on Hydro-Tite for jointing bell and spigot water pipe mains. The book is well illustrated and will be of value to any reader interested in the subject. In writing to Hydraulic Development Corporation, please mention The Excavating Engineer.

Apologetic cop, after opening door of a large car parked by the side of a country road:

"Oh! Pardon me! I thought maybe it was a dead gangster!"

FOR SALE

Space under this heading is available at the following rates, payable in advance of publication:

1 to 3 inches	$5.50 an inch net
Over 3 to 7 inches	5.25 an inch net
Over 7 inches	5.00 an inch net

An inch is measured vertically on one column—three columns to a page. Any space may be used measured by the even inch in height and by one, two or three columns in width.

The price per inch is based on total space used—multiply ad. space by number of continuous insertions.

Address all box numbers c/o The Excavating Engineer at South Milwaukee, Wisconsin

Small Shovels

Under 2 yards

USED-BUCYRUS-ERIE 41-B STEAM SHOVEL "cat" mounted. 21-foot boom, 15-foot dipper handle, 1¼-cubic-yard all cast dipper. Power boom hoist. Has been thoroughly checked over and reconditioned, and can be demonstrated any time. Will guarantee. Located vicinity New York City. Box 205-SS

TYPE B ERIE SHOVEL; Shop number near 2025, caterpillar mounted, 19-foot 8-inch boom, 16-foot handle, ¾-cubic-yard dipper. Machine in first-class condition, located northwestern Texas. Priced to sell. Box 193-SS.

1½-YARD OSGOOD STEAM SHOVEL also dragline and clamshell equipment with 1-yard drag and clam buckets. Bought in August 1926 and reported to be in first class operating condition. Located near Detroit. Box 149-SS.

ONE 18-B BUCYRUS, ⅞-yard dipper on full revolving caterpillars. Box 182-SS.

SLIGHTLY USED AND FULLY RECONDITIONED BUCYRUS-ERIE COMBINATION D-2 DIESEL, equipped with 23-foot shovel boom, 12-foot 6-inch dipper handle and 1-cubic-yard dipper. Also has 45-foot dragline boom and Delco lighting plant. Would rent for a long period with option of purchase. Located Southern Indiana. Box 130-SS.

20-B BUCYRUS STEAM SHOVEL, shop number 3743, caterpillar mounted, 20-foot 6-inch boom, 15-foot dipper handle, ¾-cubic-yard dipper. Located near Chicago. Priced to sell. Box 210-SS.

31-B STEAM SHOVEL, Number 4880, in very good condition; priced right; located Pittsburgh, Pennsylvania. Box 128-SS.

TYPE "B" ERIE STEAM SHOVEL, caterpillar mounted equipped with 21-foot 3-inch boom, 18-foot 6-inch dipper handle, power boom hoist, ¾-cubic-yard dipper; in excellent condition; just installed $400 worth of repairs. Located vicinity Kansas City. Box 80-SS.

TYPE "B" ERIE STEAM SHOVEL, caterpillar mounted, equipped with 21-foot boom, 18-foot dipper handle, boom hoist, ¾-cubic-yard dipper; sold new 1924; just completely overhauled; priced reasonably at $1,700. Located vicinity of Chicago. Box 41-SS.

ERIE TYPE "GA-2" GAS + AIR SHOVEL, shop number 4117, mounted on spur gear drive caterpillar trucks, and equipped with a 24-foot boom; 18-foot, 4-inch dipper handle; 1-cubic-yard manganese cast front socket inserted tooth dipper; power boom hoist; air self-starter, and all equipment and appurtenances in accordance with the specifications of the Bucyrus-Erie Company, f.o.b. cars shipping point Virginia. Box 126-SS.